

# SAFIM RANGE

## Product Line Presentation



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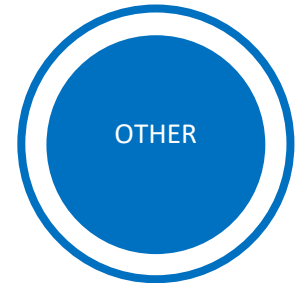
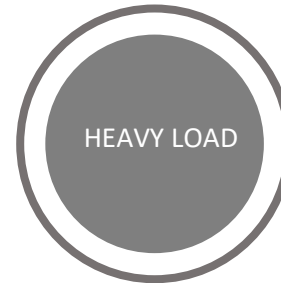


# 1. introduction

- | Safim's portfolio includes brake actuation components and systems for off-highway vehicles for various applications, including those that have challenging requirements.

Each product is tailored to the client's requirements. The products perform to the clients needs and are compliant with various Off-Highway regulations worldwide.

- | The field of application of Safim's product range covers a wide range of off-highways vehicles like tractors and trailers, earth moving equipment, forestry machineries, underground mining vehicles, airport ground support, sweepers, heavy load vehicles.



## 2. Product range overview

Safim's portfolio includes brake actuation components and systems for off-highway vehicles for various applications, including those that have challenging requirements. Each product is tailored to the client's requirements. The products perform to the clients needs and are compliant with various Off-Highway regulations worldwide.



**Master Cylinders**  
NON-BOOSTED  
BOOSTED VERSION



**Full Power Brake Valves**  
S6 | S6E | S6T  
ACCUMULATOR CHARGING  
PARK BRAKE LEVER



**Master Priority Valves**



**Trailer Braking**  
TBU  
SINGLE LINE TRAILER BRAKE VALVE  
RVBR – DUAL LINE TRAILER BRAKE SYSTEM

# 3. Master Cylinders

## 3.1 Non-Boosted Version

Straight and Step Bore Master Cylinders

Master Cylinders, Straight and Step Bore type, are available in both Hydraulic oil and brake fluid versions; actuated by mechanical effort with a pedal assembly or by a push-rod. Brake pressure is based on the bore diameter and the force applied to the piston. Piston sensors can be added to the cylinder or pedal assemblies.

Both straight bore and step bore master cylinders available in multiple configurations:

- | Single or Double circuit
- | Twin and Balanced design

Step Bore master cylinders allow the user to generate higher brake pressures with less pedal effort than a straight bore cylinder. Step Bore master cylinders fill the brakes with the large bore dia. then transition to the small bore to generate the high pressure. The Non-Boosted Master Cylinders are used in applications that have lower brake displacement requirements.

Brake pressure is based on the bore diameter and the force applied to the piston.



# 3. Master Cylinders



## 3.2 Boosted Version

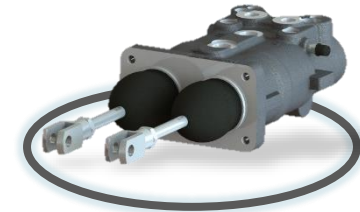
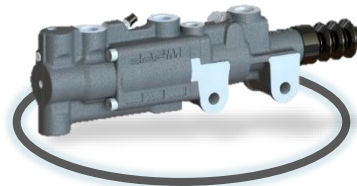
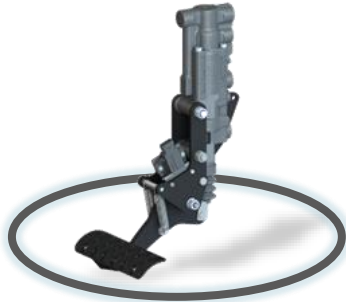
Open and Closed Center with Straight and Step Bore Master Cylinders

MATERIAL HANDLING |  
AIRPORT GROUND SUPPORT |  
UTILITY |  
UNDERGROUND |  
MINING |  
SUPPORT VEHICLES |  
AGRICULTURAL TRACTORS |  
LANDSCAPING EQUIPMENT |

The SAFIM boosted Master Cylinders are used in applications having higher brake pressure requirements, in fact boosted master cylinders allow for lower pedal effort over standard Master Cylinders. Boosters can be used with Straight and Step Bore Master Cylinders. Position sensors can be added to the cylinder or pedal assemblies. Vertical and horizontal mounts available, the Boosted version are available for Hydraulic Oil and Brake Fluid Systems, Open and Close (Load Sensing) center more accumulator can be added for Power off braking.

Boosted master Cylinders are available in multiple configurations:

- | Single or Double circuit
- | Twin and Balanced design



# 4. Full Power Brake Valves

## 4.1 S6M | S6E | S6T



MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |

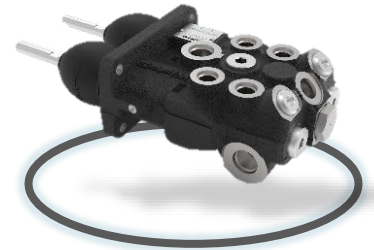
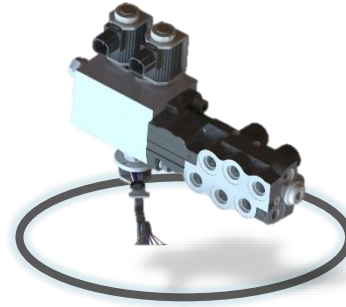
**S6** Power Brake System family is a compact assembly with all the various valve components grouped in a single modular unit, with the advantage of reducing the number of connections.

The S6 is available in both Horizontal and Vertical version, Negative and Positive Brakes, from 1 up to 4 circuits, Floor or Firewall mount pedal assemblies.

Factory pressure setting, with fine tuning available in the field.

Additional functions available:

- | Parking Brake control
- | Pilot Operated
- | EH control
- | Position Sensor



## S6M

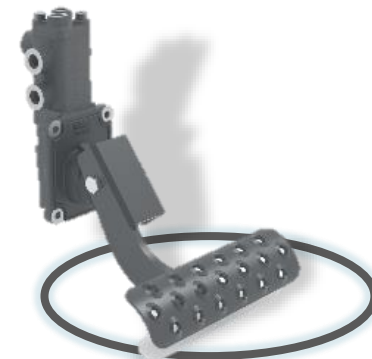
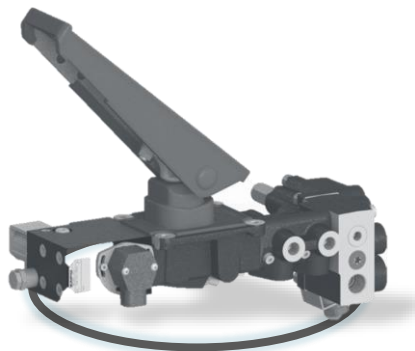
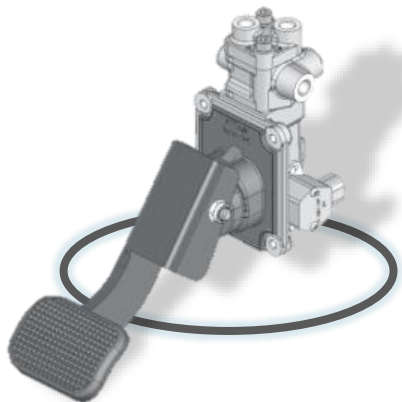
The S6 is available in both Horizontal and Vertical version, Negative and Positive Brakes, from 1 up to 4 circuits, Floor or Firewall mount pedal assemblies.

Factory pressure setting, with fine tuning available in the field.

MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |

Additional functions available:

- | Parking Brake control
- | Pilot Operated
- | EH control
- | Position Sensor





## S6E

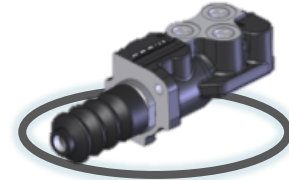
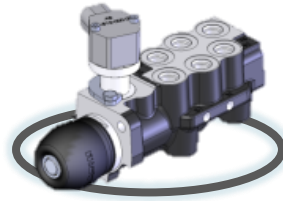
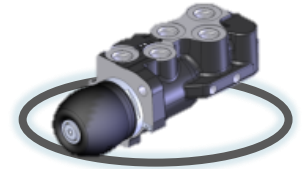
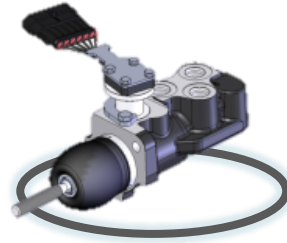
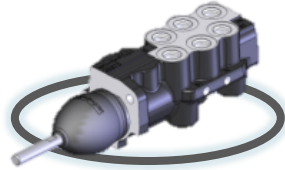
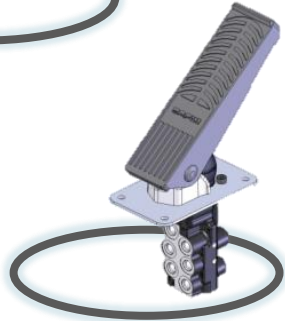
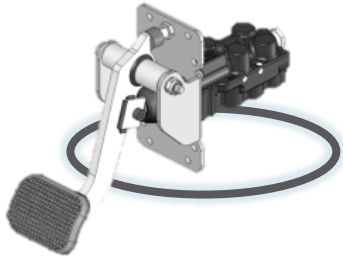


The S6E Power Brake Valves provide reduced pedal effort along with higher pressures and flows to the brakes for larger vehicles, is available in both Horizontal and Vertical version, Negative and Positive Brakes, Single and Dual Circuits, Push rod, Firewall and Floor Mount Pedal assemblies.

Additional functions available:

- | Pilot Operated
- | EH control
- | Position Sensor (Non-contacting hall effect)

MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |



## S6T

The S6T Power Brake Valve is a compact design for brake assist steering applications.

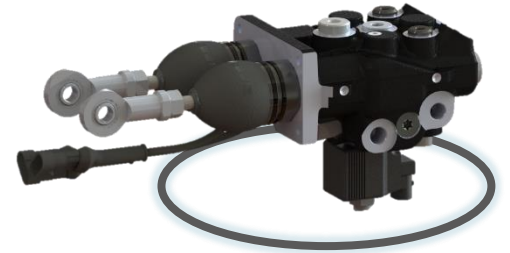
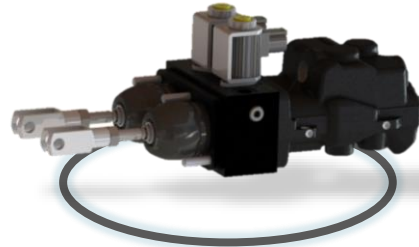
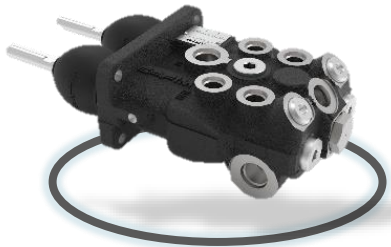
Valve maintains equalized pressure on all brakes, dual pedal or push rod input for control of individual rear brakes. Factory pressure setting, with fine tuning available in the field.

Additional functions available:

- | Pilot Operated
- | EH control
- | Position Sensor



MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |



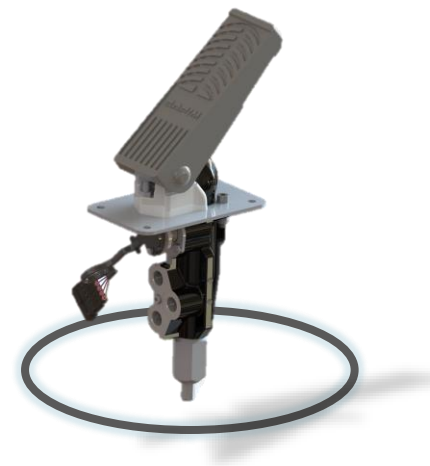
## S6EK

The S6EK is available in both Horizontal and Vertical version, Floor or Firewall mount pedal assemblies.  
Factory pressure setting, with fine tuning available in the field.

Additional functions available:

- | Parking Brake control
- | Pilot Operated
- | EH control
- | Position Sensor

MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |



## 4.2 ACCUMULATOR CHARGING VALVES



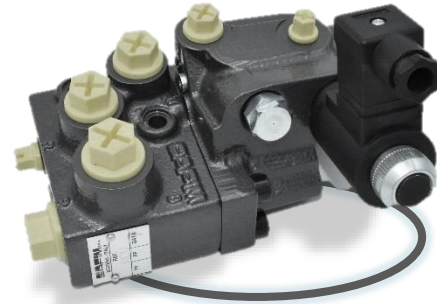
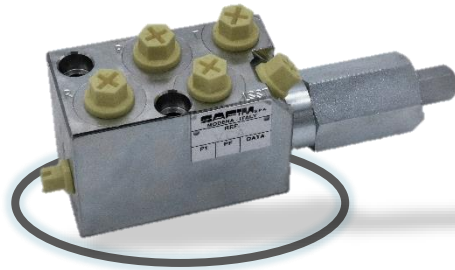
MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |

SAFIM Accumulator Charge Valves supply oil to an accumulator to supply power to the brake system for service and/or power off braking.

Factory pressure setting, with fine tuning available in the field.

Additional functions available:

- | Parking Brake control
- | Parking Brake control with Pressure Reducing Valve in-built
- | Start Unloading valve



## 4.3 PARK BRAKE LEVER



**Park brake Lever** Power Brake Valve is a compact design for brake assist ste.

The S6 is available in both Horizontal and Vertical version, Negative and Positive Brakes, from 1 up to 4 circuits, Floor or Firewall mount pedal assemblies.

Factory pressure setting, with fine tuning available in the field.

MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |

Additional functions available:

- | Parking Brake control
- | Pilot Operated
- | EH control
- | Position Sensor



# 5. Master Priority Valves

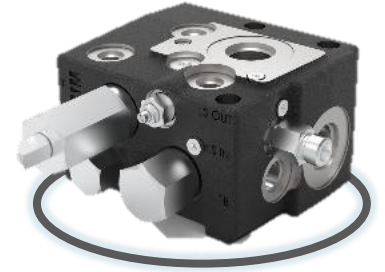
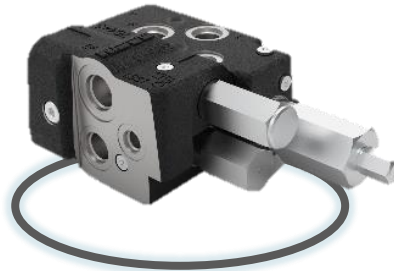
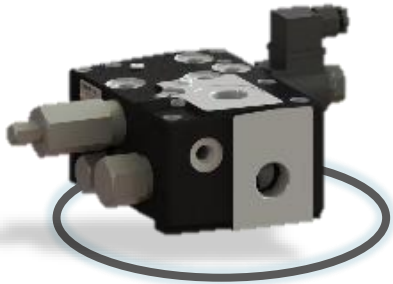


MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |  
MINING EQUIPMENT |

The Master Priority Valve® is an hydraulic unit which delivers oil to 3 different functions with different customizable priority levels:

- | Steering unit
- | Brakes
- | Exceeding Flow for Directional valves
- | Position Sensor

The MPV can be Open center or LS, inline and flange mount, its flow rates are 80LPM, 160 LPM, 250 LPM and pressures up to 300 bar. The large internal passage gives a very low pressure drop.



# 6. Trailer Brake

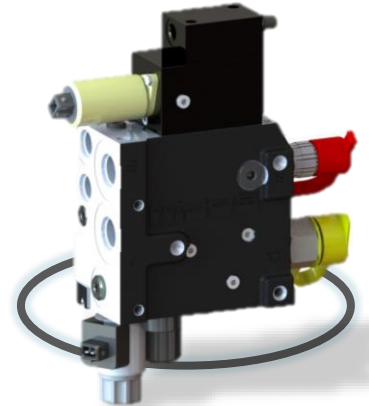
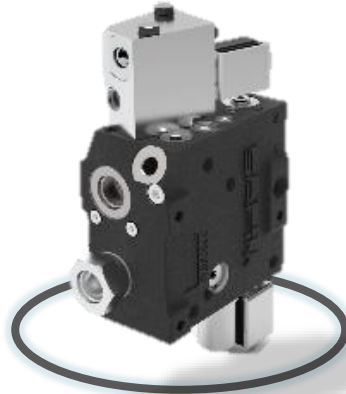
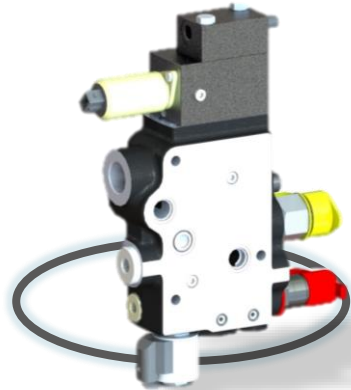
## 6.1 TBU



MATERIAL HANDLING |  
AGRICULTURAL TRACTORS |  
EARTH MOVING |  
HARVESTING EQUIPMENT |

The Dual Line Trailer Brake Unit provides complete control of the Control Line and/or the Supplementary Line in RVBR tractors. They can easily be installed in existing hydraulic systems, can be mounted in-line or flanged to the existing valve stack. Open Center and Closed Center (LS) versions available. Max pressures up to 220 bar with flow rates up to 100 LPM.

- | Electrohydraulic Proportional Pilot
- | Automatic detection of trailer connection type
- | Parking function piloted by tractor parking brake pressure line
- | Advanced functions giving priority to trailer braking



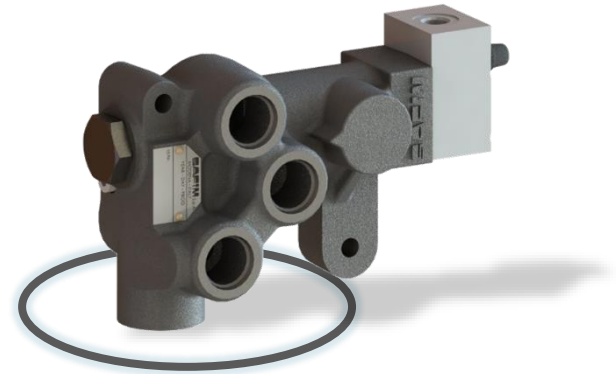
# 5. Trailer Brake

## 5.2 SINGLE LINE TRAILER BRAKE VALVE

The Single Line Trailer Brake Valve is piloted by the tractor brake pressure to proportionally operate the brakes at the trailer.

Valve is available in Open Center / Closed Center / Load Sensing (Open and/or Closed Center).

Valve designs compliant with CUNA Regulation for Italian market.

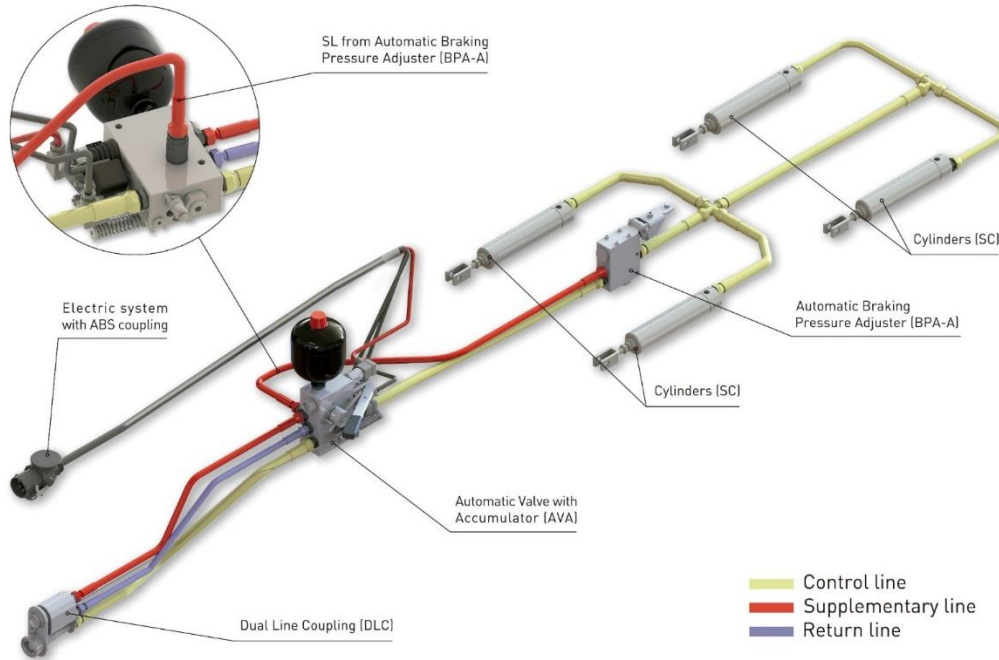




# 6. Trailer Brake

## 6.3 RVBR – Dual Line Trailer Brake System

AGRICULTURAL TRACTORS |  
TOWED VEHICLES |

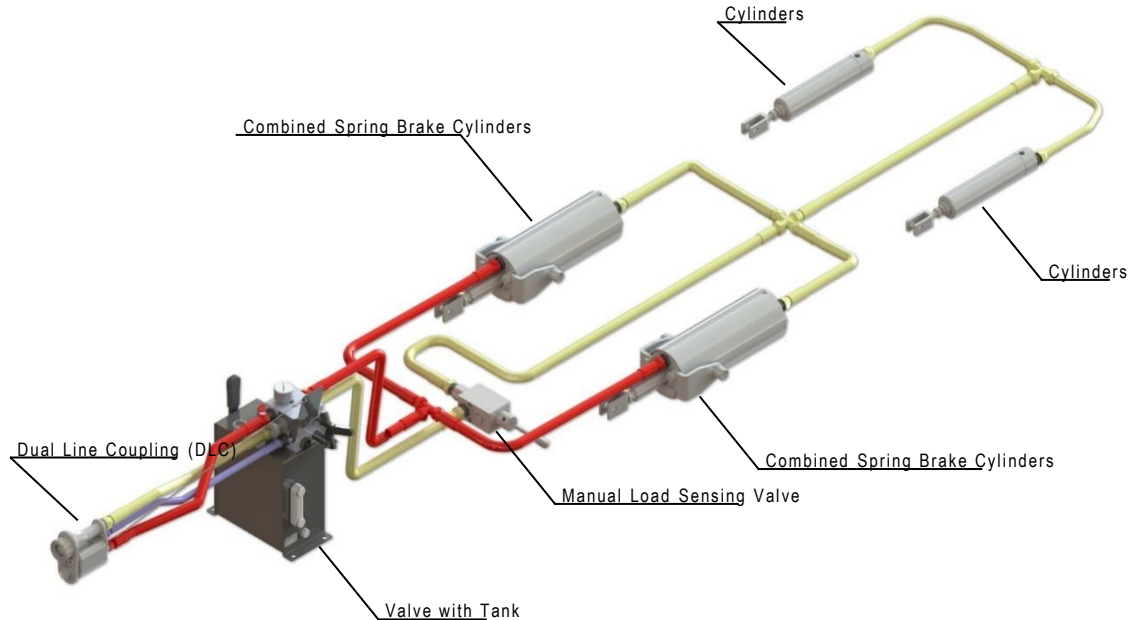


### ACCUMULATOR SYSTEM

In event of emergency, the automatic braking function uses the pressurized oil stored in the accumulator. The benefit of this system is the compactness of the brake actuators, which can be located on trailers having limited room. This system can be used with the hydraulic brakes integrated on the hub too. Further to the standard two hydraulic lines, the system needs and electrical connection to the tractor (ISO 7638 – ABS plug).

# 6. Trailer Brake

## 6.3 RVBR – Dual Line Trailer Brake System



### CYLINDER & TANK SYSTEM

A CTS system uses a merely mechanical energy source to actuate the automatic emergency brake function. The compressed springs, located in one of the two section of of a combined cylinder, provide the energy. The Supplementary Line oil in pressure keeps the springs compressed and releases them when the coupling disconnects from the tractor.

This system does not need any electrical connection, because is connected to the tractor only via hydraulic hoses.

Brake actuators are combined cylinders, made up of two sections, one for service brake function, the other for automatic brake and parking brake function.

A separated tank collects the oil used to release the spring brakes. If it is necessary to remove the automatic braking function, a manual pump conveys the oil to the cylinders compressing again the springs.

Thank you  
for your attention!

[www.safim.it](http://www.safim.it)

