

## DATA SHEET



Engines, hydraulics, fuel lines and electric installations constitute the most severe fire risks on a vehicle. The fires often get very fierce and are difficult to reach with a hand fire extinguisher.

The development of the Forrex system is based on our 20 years experience of fire suppression systems for vehicles. The Forrex system combines the advantages of the former halon and dry chemical installations:

- a high efficiency extinguishant preventing reignition
- space saving equipment adapted to installation on vehicles and made for the most severe working conditions.

### Construction

#### Extinguishing system

The FORREX-installation normally protects engine room, converter, hydraulic equipment and brakes. The normal amount of extinguishing fluid is 3 litres per cubic metre of protected volume, stored in one or more tanks.

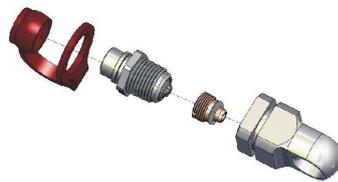
The tanks are activated electrically via the fire alarm or manually directly on the tank valve or from a pull handle.

To meet the requirements of the insurance companies, the system must be designed according to their projecting rules and installed by an authorized fitter.

#### Fire alarm

The protected spaces are fitted with heat sensitive detectors, normally 4 to 8 depending on the size of the vehicle. The control unit and a separate alarm lamp are positioned in the cab. An alarm horn is also included in the installation.

Any fault in the detection or actuation system is indicated by LEDs on the control unit. Alarms and fault indications can be tested with a switch on the control unit.



*FORREX-nozzle with filter and hood protecting against dirt.*

### Four system types

There are four various systems - mechanical, manual, semi-automatic and fully automatic.

#### Mechanical system - Type M

Comprises only a fire extinguishing installation and no fire alarm or other electric components.

At fire, the tanks are actuated manually either directly on the valves or from a pull handle.

#### Manual system - Type EM

The mechanical system complemented with a fire alarm. At fire, an alarm horn and an alarm lamp are activated. The tanks are operated manually either from an electric push button on the control unit in the cab or from a pull handle.

#### Semi-automatic system - Type EAM

The fire suppression system discharges automatically at fire only when the machine is unmanned, i.e. when the master switch is turned off. When the machine is at work with the power on, a fire actuates only the alarm signals. The driver should then stop the vehicle and turn off the master switch or operate the extinguishing installation manually.

Manual operation can be made from a firing button on the control unit in the cab or from one or more pull wires from the outside of the vehicle.



*Control unit of modern design meeting the demands of the EMC directive*

## Automatic system - Type EAA

At fire alarm, this system will automatically stop the engine, cut off the fuel, turn off the master switch and actuate the extinguishing installation. The system can be set for manual operation only, when the vehicle is run on a public road.

There are also automatic systems with delayed actuation of the extinguishing installation. They do not discharge the extinguishant until 10 to 20 seconds after the cut offs have been activated, when engine and fans have come to a full stop.

## FORREX - the optimum extinguishant for vehicle fires

The liquid used in the Forrex system is specially produced for use on vehicles. It copes with fires in flammable liquids like petrol, diesel and hydraulic oils and in burning solids like wood, chips and peat. It smothers quickly and efficiently e.g. diesel oil flowing from a burst fuel pipe or hydraulic oil sprayed under pressure. The liquid will also stay on a bed of saw dust, chips and the like, preventing reignition.

Compared to dry chemical installations, the FORREX systems require less space and make cleaning simpler after a fire. The tanks are of stored pressure type. Therefore, there are no gas cartridges. The tanks can also be fitted horizontally.

After use, the engine room must be cleaned. This can be done just by flushing with water.

## Insurance regulations

The insurance companies in Sweden have very stringent demands for the fire protection of off-road vehicles moving in fire hazardous surroundings or handling inflammable goods.

The regulations (SBF 127) comprise rules for testing and approval of all vital components in the fixed fire extinguishing system, like control units and detectors. They also prescribe several fire prevention measures, e.g. that shut-offs for engine, fuel and battery must be easily accessible from the outside of the vehicle. Further, they define the types of electric cabling, fuel lines and air piping that may be used and how they should be laid.

The vehicle must normally be fitted with a semi-automatic fire suppression system plus two multi-purpose dry chemical fire extinguishers.

## References

Some of our customers include:

- Rottne Industri AB
- Tigercat
- Engson Maskin AB
- Caterpillar Forest Products
- Timberjack AB
- Komatsu Forest AB
- Gremo Svenska AB

For the last 25 years, Dafo has installed more than 15000 systems on forest and mining machinery. A large number of other commercial vehicles have also been protected using Dafo vehicle fire suppression systems.

## Function

Fire is indicated by heat detectors closing an electric circuit to the control unit, which in its turn activates the mechanical/electrical valve on the FORREX tank.

The tank is pressurized with nitrogen, forcing the liquid through the pipe work and the nozzles.

Audible and visual alarm signals are activated by the fire and also a pulsating light in the manual firing button on the control unit in the cab.

If automatic closing devices are connected to the control unit, these are activated at the same time as the extinguishing system, e.g. engine cut-off or a fuel solenoid.

Manual operation of the installation can be made from the firing button on the control unit or with the manual release device.

