

# Fire suppression system for engine compartment

*Issued to*

## Dafo Vehicle Fire Protection AB

Box 683, 135 26 Tyresö, Sweden

### Product and product name

Fire suppression system, Dafo Forrex Fire Suppression System

### Type

Water based fire suppression system  
Suppression agent: Dafo Forrex AB-50

### Technical data/Performance/Classification

See appendix to this certificate.

### Certificate

The product described above fulfils the requirements in RISE Certification rules regarding Fire suppression systems in engine compartments of buses and coaches, SPCR 183 edition 2017-09-08. The certification is based on the manufacturer's technical file and type tests performed in accordance with standards specified in the appendix to this certificate.

### Marking

Marking shall show SPCR 183, RISE logo, manufacturer's logo, the number of this certificate, the name of the product, its serial number, the name of the manufacturer and RISE P-symbol. See appendix for details.

### Validity

This certificate is valid until not longer than 27<sup>th</sup> June 2024.

### Miscellaneous

The manufacturer's in-house inspection is under surveillance by RISE in accordance with section 4 and 5 of SPCR 183. Other terms and conditions are set out in section 6 of SPCR 183.

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Certificate No. SC1061-13 | issue 2 | 2019-06-27

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### Product information

#### Technical data of the tested suppression system

Table 1 shows technical data of the suppression system tested for 4 m<sup>3</sup> engine compartment volumes. The system may be scaled to fit the size of a specific engine compartment according to the scaling rules in SPCR 183.

Table 1, Technical data of the tested Dafo Forrex fire suppression system

Manufacturer	Dafo Vehicle Fire Protection AB
Fire suppression system name	Dafo Forrex
Extinguishing agent name	Dafo Forrex AB-50
Extinguishing agent type	Water based
Extinguishing agent mass	14,6 kg
Extinguishing agent container	SV-K 12,5
Extinguishing agent container article number	55-1651-12
Propellant gas	Nitrogen
Mass of propellant gas	198 g (±14 g)*
Pressure in propellant gas cartridge	145 bar (at +20°C)*
Propellant gas delivery hose	One ¼" hose with a length of 1 m
Extinguishing agent delivery hose	Two ½" hoses with a length of 3m and 3,5m
Extinguishing agent delivery pipes	Steel pipes with 10mm inner diameter
Type of nozzles	19 pcs. DW2 (100° full cone, 1.6l/min)* 1 pc. BETE FF125145 BSP (140° flat spray, 2.8l/min)* - nozzle 8 in figure 4 & 5.
Number of nozzles	20
Distance to the most remote nozzle	7,0 m
Total length of agent delivery system	11,0 m
Discharge time	Approximate 8 seconds of suppression agent discharge and additional time with nitrogen gas discharge
Number of fittings	2 pcs Straight fittings 8 pcs T-couplings 11 pcs Elbow fittings

\* Information provided by manufacturer



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### Performance - Tested fire scenarios according to SP Method 4912

A summary of the results can be found in Table 2. The test numbers refer to SP Method 4912. More information about the tests is shown in the test report.

Table 2, Results

Test	Air flow	Test scenario category	Results
1	0 m <sup>3</sup> /s	High fire load test Minimum operating temp. test T <sub>min</sub> = -30 °C	Pass Pass
2	0 m <sup>3</sup> /s	Low fire load test	Pass*
3	0 m <sup>3</sup> /s	Hidden fire test	-
4	0.5 m <sup>3</sup> /s	Class A-fire test	Pass
5	1.5 m <sup>3</sup> /s	High fire load test	Pass
6	1.5 m <sup>3</sup> /s	Low fire load test	Pass*
7	1.5 m <sup>3</sup> /s	Hidden fire test	-
8	3 m <sup>3</sup> /s	High fire load test	-
9	3 m <sup>3</sup> /s	Low fire load test	Pass*
10	3 m <sup>3</sup> /s	Hidden fire test	-
11	0 m <sup>3</sup> /s	Hot surface re-ignition	00:47 min & 00:54 min

\* Passed with an amount of agent reduced by 20% compared to the ordinary amount of agent.

Table 3, Rating according to SP Method 4912

Category	Category Rating
1 High fire load	2
2 Low fire load	3
3 Class A-fire	1
4 Hidden fire	0
5 Hot surface re-ignition protection	00:47 min
<b>Total Rating</b>	<b>6</b>

### Component tests

In addition to fire tests components in the fire suppression system need to be verified and tested through international standards as specified below.

Table 4, results

Property	Standard	Result
Mechanical stress resistance (vibration and shock)	ISO 16750-3:2007 (Test VII)	Pass
Corrosion resistance	ISO 21207, test method B (3 cycles)	Pass



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### Conditions

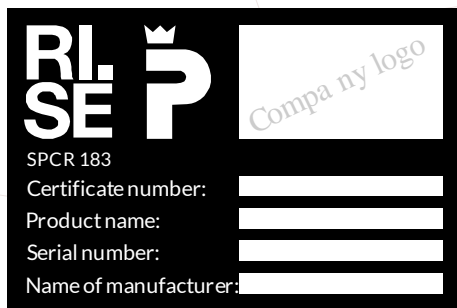
Electrical equipment included in the system shall have a classification of at least IP65, and tested in accordance with IEC 60529:1989/A1:2009/COR3:2009.

A risk assessment in accordance with SPCR 183 section 3.2 shall be made prior to equipment being placed into service. The risk assessment shall be made by personnel having documented experience for the task.

It is the responsibility of the suppression system manufacturer to assure compliance of its suppression system components with legal requirements and vehicle manufacturer requirements.

The marking of the product shall be legible and durable and be placed adjacent to the engine compartment and be designed as below. The size of the sign shall be 40 x 60 mm.

Marking plate template:



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