



FEDERATION INTERNATIONALE
DE L'AUTOMOBILE

Homologation
N°:

EX.002-98

Certificat d'homologation pour les systèmes d'extinction plombés dans les voitures de course

Homologation certificate for motor sport fire extinguisher systems

1. GENERALITIES / GENERAL

- 101 Constructeur
Manufacturer Lifeline Fire and Safety Systems Limited
- 102 Adresse
Address 1 Portway Close (off Torrington Avenue)
Coventry CV4 9UY
- 103 Nom du système
System name Lifeline
- 104 Dénomination commerciale
Commercial name Zero 2000
- 105 Véhicules pouvant être équipés de ce système (Le cas échéant, indiquez si ce système est valide pour tous les groupes)
Vehicle for which the system may be used (indicate if the system is valid for all groups):
Designed for all groups
- 106 Photo du système complet
Photo of the complete system



2. DESCRIPTION DU SYSTEME / SYSTEM DESCRIPTION

201 Agent extincteur
Extinguishant AFFF

202 Capacité totale du système
Complete Capacity of the system 2.6 litres/Kg

203 Norme à partir de laquelle a été approuvé l'agent d'extincteur
Standard from which the extinguishant has been approved EN3

204 Couleur de l'étiquette indiquant le type d'extincteur utilisé
Colour of the label showing the type of extinguishant used SILVER

205 Pression d'utilisation
Fill pressure 8 Bar

206 Pression minimale
Min Pressure 7 Bar

207 Si le système est normalement non pressurisé, définir le type de pressurisation
If system is normally unpressurised define type of pressurisation:

208 Taille de la bonbonne Diamètre Hauteur
Size of the bottle 155 mm Diameter Height 180 mm

209 Poids de la bonbonne
Weight of the bottle 2.8 kg (single bottle)

210 Système de déclenchement Manuel / Manual Electrique / Electric Automatique / Automatic
Activation system

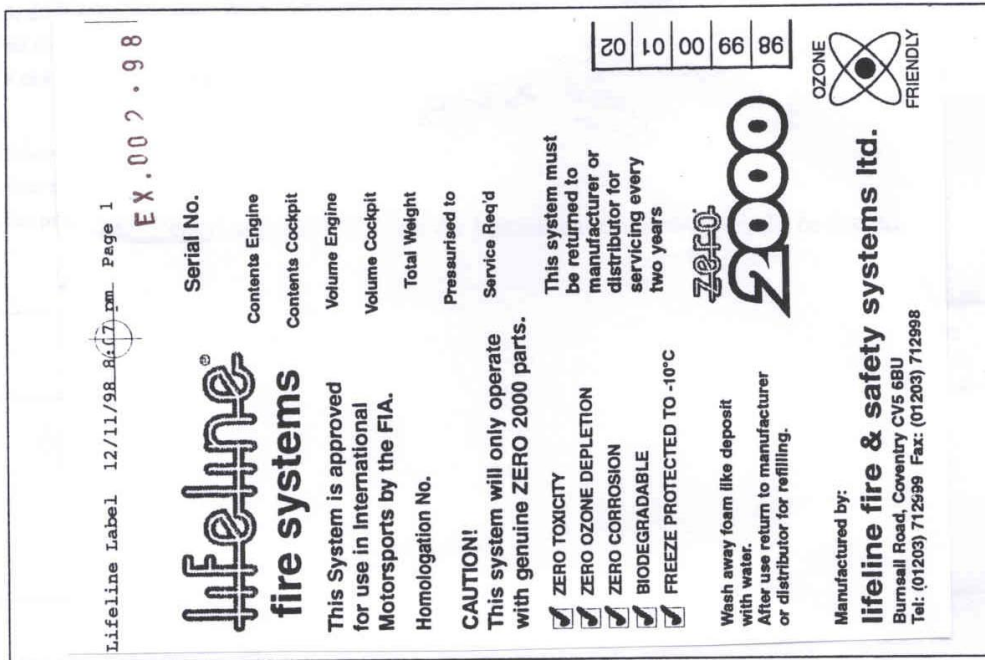
*Cocher la mention utile
Tick off as applicable*

211 Gamme de température d'utilisation
Operating temperature range -10 + 60 °C

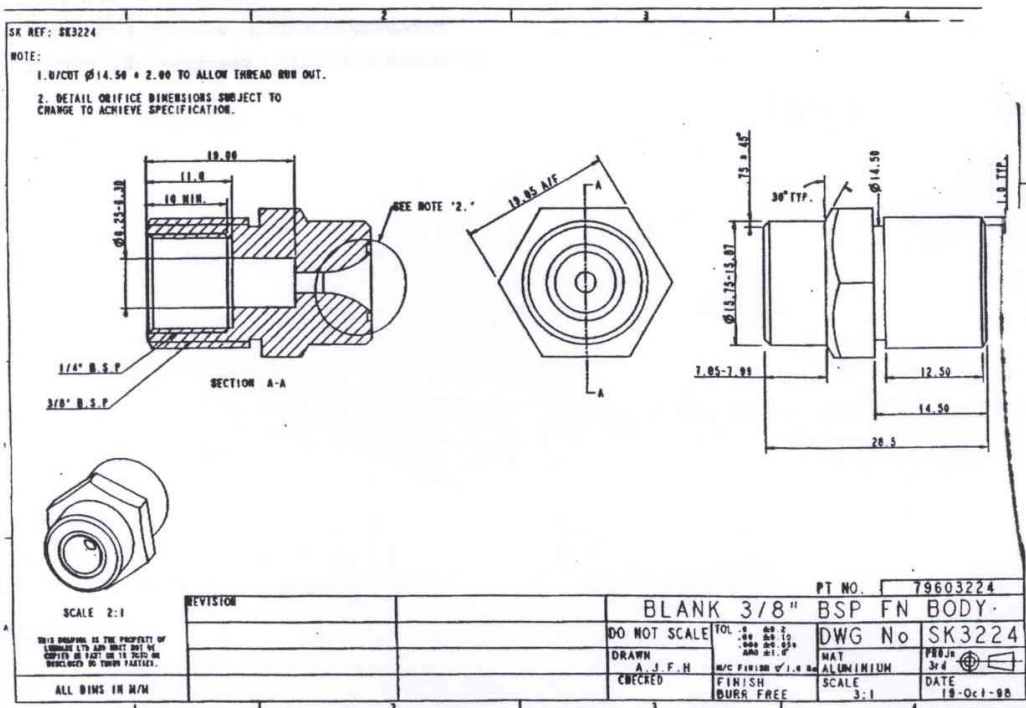
212 Nombre d'ajutage minimum dans le compartiment moteur
Minimum number of nozzles in the engine compartment 2

2. DESCRIPTION DU SYSTEME / SYSTEM DESCRIPTION - Zero 2000

213 Photo d'une bonbonne montrant l'étiquette indiquant l'agent d'extincteur utilisé
 Photo of one bottle showing the label of the extinguishant used



214 Dessin d'un ajutage
 Drawing of a nozzle



Rapport de tests / Test Report


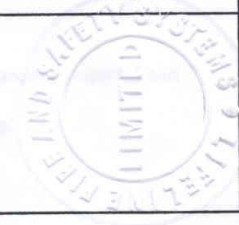
3 ENGAGEMENT DU FABRICANT / MANUFACTURER'S RECOGNITION

Je déclare que le système décrit ci-dessus:

- est conforme à la norme FIA sur les systèmes d'extinction plombés dans les voitures de courses
- a passé, sous ma supervision, avec succès l'ensemble des tests décrit dans la norme FIA

I declare that the system described above:

- is in conformity with the FIA standard for motor sport fire extinguisher systems
- has passed, under my supervision, all the tests described in the standard.

Date	Nom et signature Name and signature	Visa d'approbation Endorsement stamp
1/12/98	 Jim Morris	

ANNEXES / APPENDICES

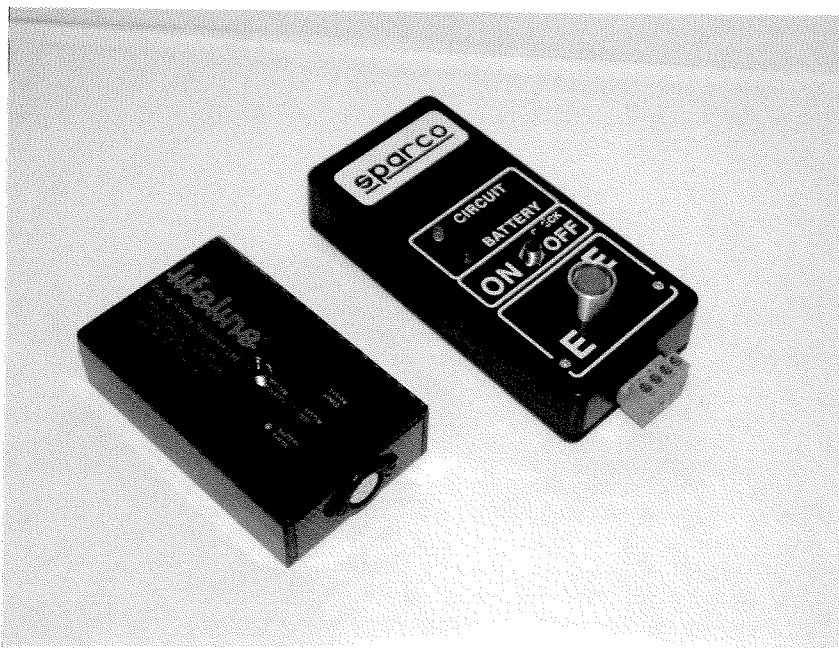
- Rapport de test / Tests report
- Instruction d'installation / Installation instructions
- Instruction de maintenance / Maintenance instructions

Amendment to Homologation EX.002.98

Date 10th July 2002
Item Power Pack
Test report No 285/4239910


Amendment

Lifeline Power Pack and Sparco Power Pack are both compatible with either a Lifeline extinguisher system homologation number EX.002.98 or Sparco extinguisher system homologation number EX.011.01. This has been independently tested by BSI and confirmed on test report 285/4239910.



Signed

Jim Morris
Director


MOTOR SPORTS ASSOCIATION
UNITED KINGDOM
[Signature]
15 July 2002

lifeline®

Fire & Safety Systems Ltd.

~~zero~~
2000

Fitting Instructions

Please read carefully before attempting to install your system

Thank you for purchasing an FIA approved Zero 2000 Lifeline fire system. It is important that you read these instructions carefully before attempting to install your extinguisher system.

The system should in no way be modified or tampered with as by doing so, you could seriously effect its performance. If you need to replace parts, only genuine Lifeline components should be used.

Should you experience any difficulties installing your system, please do not hesitate to contact Lifeline on 01203 712999.

IMPORTANT NOTE

The purpose of any vehicle fire protection system is to provide a time envelope in which to control the fire in order to accomplish evacuation of the occupants. Ideally, the fire will be totally extinguished, but this cannot be guaranteed. Holding back the intensity of an engine or a cockpit fire to enable the occupants to evacuate or outside assistance to be given, is the main purpose.

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4	Wiring Diagram for Dual Chamber Extinguisher
5	Nozzle Locations
7	Tubing
8	Kit Contents
9	Technical Specification
10	Maintenance

FITTING INSTRUCTIONS - ZERO 2000

Unpack the kit carefully and check that all components are complete. Lay out the components so that each may be identified.

See page 8 for kit component listings.

Remove the extinguisher from its mounting bracket by undoing the over-centre clips. Decide the best position for the extinguisher to be mounted bearing in mind that the extinguisher label, showing its contents etc. and pressure gauge should be clearly visible. Securely mount the extinguisher bracket to the vehicle and replace the bottle.

Electrical Systems

Mount the power pack so that it is clearly visible. Mount the switches to the vehicle, noting that the switch with the red plastic shroud is for the cockpit. The switch with the flexible push button is for the outside of the vehicle as it is waterproof. The cockpit switch should be mounted so that it is within easy reach of the driver and/or co-driver when sitting in the normal driving position and wearing fully fastened seat belts.

Wiring of System

See Wiring Diagrams on pages 3 & 4

All Lifeline Zero 2000 electrical extinguisher kits have a separate power pack unit to provide the current needed to operate the system. The power pack should be wired independently from the vehicle's electrics as failure to do this may result in the actuation of the system due to electric interference from the vehicle's power source.

Once the system has been wired in accordance with the wiring diagrams shown on pages 3 & 4, a test check should be carried out to ensure that the system will fire properly. Before you start the check procedure, ensure that the bottle and the power pack are connected.

On top of the power pack is a three position switch. This provides checking facilities for the battery and wiring. If the switch is pulled against its spring towards the amber diode, the diode will light if there is sufficient current in the battery. IF THE DIODE DOES NOT LIGHT, OR IMMEDIATELY GOES OUT, IT SHOULD BE REPLACED. THE BATTERY SHOULD BE OF THE MANGANESE / ALKALINE TYPE ONLY.

With the switch in the centre ('system isolated') position, and the centre position only, the wiring of the circuit can be checked. With the extinguisher(s) connected, press one of the firing buttons and the green diode should light. If it does not there is a break in the circuit. If the diode lights before the switch is pressed, there is a short in the circuit and the system is permanently 'live'. If this occurs, DO NOT PUT THE SWITCH INTO THE 'SYSTEM ARMED' POSITION, OR YOU WILL DISCHARGE THE SYSTEM.

THE GREEN DIODE IS FOR CHECKING PURPOSES ONLY AND DOES NOT LIGHT WHEN THE SWITCH IS PUT IN THE 'SYSTEM ARMED' POSITION.

If for any reason the green LED does not illuminate when the system is tested, check the wiring against the wiring diagrams shown on page 3 & 4. If the problem persists, consult Lifeline.

Mechanical System

Mechanical systems are operated using pull cables. Each kit is supplied with two cables, one being 6ft in length and the other, 12ft. Decide upon the best position for the pull cables to be mounted, bearing in mind that the cable mounted in the cockpit should be accessible to the driver and / or co-driver when sitting in the normal driving position and wearing fully fastened seat belts. The external pull cable is normally mounted on the front scuttle of a saloon car and by the roll hoop on a single seater or open top vehicle. When installing the pull cable on a saloon car, ensure that you leave enough clearance for the bonnet to fully open.

The pull cables should be routed so that there are no sharp bends or S-shapes in the cable, this will ensure easy operation of the cables. The end of the cable should be passed through the levers of the extinguisher head and secured using the cable clamps attached to the end of the cables. It is advisable to leave a small amount of slack in the cable to prevent accidental firing of the extinguisher. It is recommended that the cables are periodically lubricated and checked to prevent seizure.

With the switch in the centre ('system isolated') position, and the centre position only, the wiring of the circuit can be checked. With the extinguisher(s) connected, press one of the firing buttons and the green diode should light. If it does not there is a break in the circuit. If the diode lights before the switch is pressed, there is a short in the circuit and the system is permanently 'live'. If this occurs, DO NOT PUT THE SWITCH INTO THE 'SYSTEM ARMED' POSITION, OR YOU WILL DISCHARGE THE SYSTEM.

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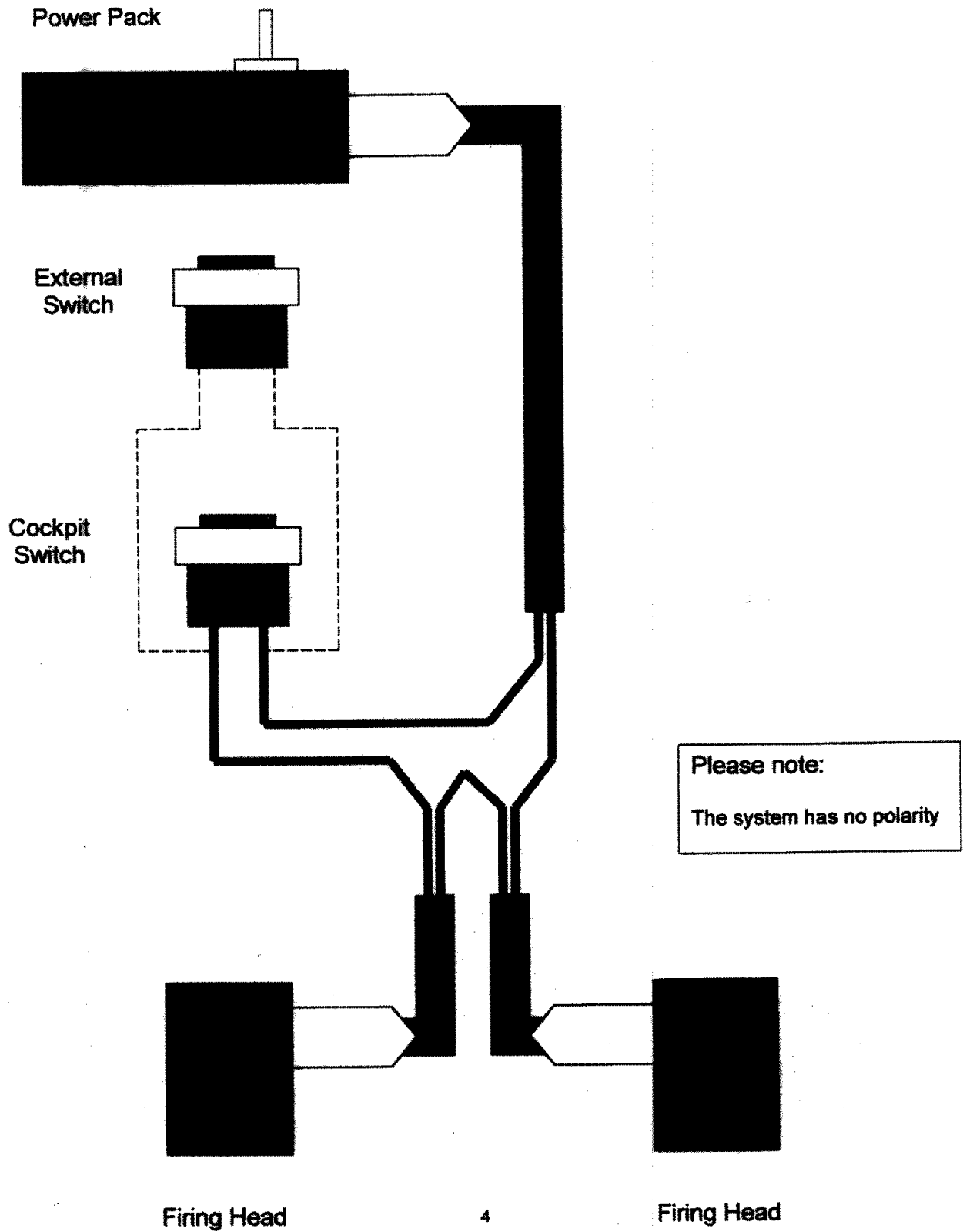
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Wiring Diagram for Dual Chamber or Twin Bottle Type Extinguisher



NOZZLES

It is important that the correct nozzles, supplied with the system, are used. The nozzles will produce an atomised foam spray. This foam spray, with its controlled particle size, has an excellent fire known-down and fire-out capability. It covers the area being protected with a milky foam substance which has a cooling effect and also controls re-ignition. At the end of the discharge, as pressure drops, the solution will thicken to a stiffer foam consistency. The nozzles produce a 90° full cone spray pattern, with an effective discharge range of 1 metre. This should be borne in mind when locating the nozzles.

Each kit is supplied with the correct number of nozzles and T-pieces to allow the correct number of nozzles to be plumbed to either the engine or the cockpit.

Cockpit Nozzle Location for Closed Cars

Two nozzles should be mounted in the cockpit area. We recommend that these are mounted under the dashboard, spraying down into the foot well of both the driver and passenger compartment. See figure 1.

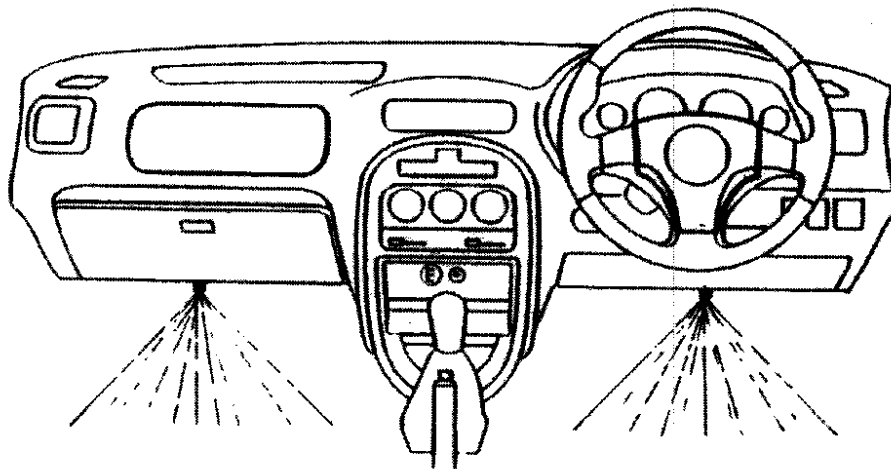


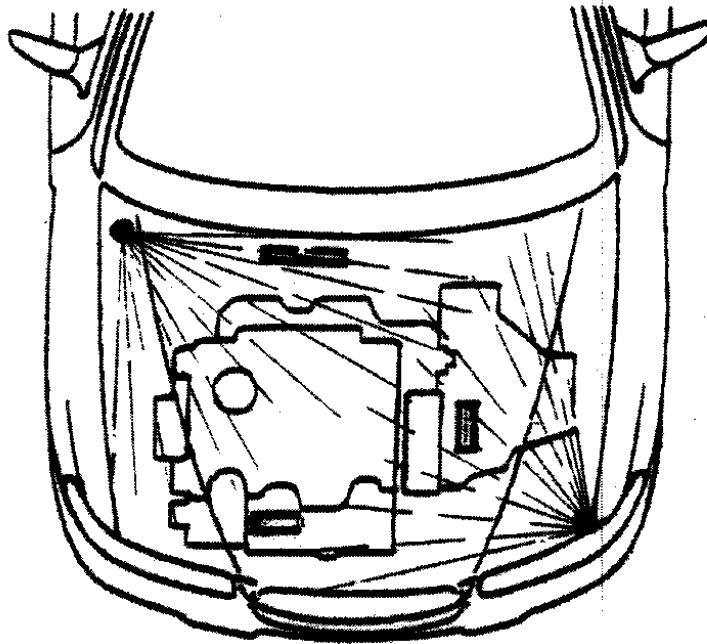
Figure 1

Cockpit Nozzle Location for Open Cars

One nozzle should be mounted in the cockpit area of an open car. The nozzle should be aimed at the driver's mid rif, in the normally seated position. Special care should be taken to ensure that the nozzle will not spray into the driver's face.

Engine Nozzle Location for both Open and Closed Cars.

Two nozzles should be mounted in the engine compartment. These nozzles spray either side of the engine, ensuring full coverage. We recommend that the nozzles are mounted diagonally apart and approximately 200mm below the bonnet shut line. See figure 2.



- denotes nozzle location

Figure 2

Lifeline nozzles are designed so that they can be mounted through a bulkhead or to a specially made bracket. Nozzles should be mechanically secured and not be simply supported by their own pipework.

Tubing

Each extinguisher kit is supplied with a roll of plastic coated aluminium tube. The system has been designed and homologated to use this type of tube. Under no circumstances should the tubing be changed for another type.

Tube Connections

To enable a simple installation, the extinguisher and nozzles use push-in fittings for the tube. To attach the tube to the fitting, ensure that the end of the tube is cut at 90° and that the outside diameter has retained its circular shape. Insert the tube into the fitting, pushing firmly until it clicks. You should then be unable to pull the tubing back out of the fitting.

To remove the tubing, push the tube into the fitting and pull the black collar on the fitting in the same direction. Once this is done, pull the tube from the fitting.

TECHNICAL SPECIFICATION OF ZERO 2000

USAGE	Racing cars, including saloons, single seaters and other cars.
CONTENTS	Foam solutions, 15% with de-ionised water.
DISCHARGE AREAS	Engine compartment and drivers compartment.
DISCHARGE TYPE	The product is stored in a container, and discharged through atomising nozzles as a very fine mist. Upon settling, it turns to a milky white liquid.
COMPOSITION	Multi-purpose synthetic foam based solution, based on salts of alkyl sulphates and alkyl ether sulphates, together with solvents and foam stabilisers.
APPEARANCE	Clear amber liquid in solution.
SPECIFIC GRAVITY	Typically within the range of 1.016 +/- 0.01
ODP	(Ozone Depletion Potential) None.
pH	8.0 +/- 0.5
CLOUD POINT	None.
FREEZING POINT	-10° Centigrade
FLASH POINT	> 100° Centigrade
SUSPENDED SEDIMENT	Less than 0.2%
MAX STORAGE TEMP	+ 49° Centigrade
PHYSIOLOGICAL PROPERTIES	Harmless, non-toxic liquid in solution.

MAINTENANCE

To ensure that you get the best possible performance from your Zero 2000 fire system, the following checks and maintenance procedures should be carried out.

- Regularly check pressure gauge or gauges are in the green sector.
- Regularly check Zero 2000 nozzles for obstructions and foreign bodies.
- Regularly check the integrity of the pipework and the fittings.
- Regularly inspect the cylinder for damage.

- Your Zero 2000 system should be serviced every 2 years. A service date is written on the extinguisher label. It is up to you to ensure that the service is carried out at the correct intervals. Servicing of the extinguisher must only be carried out by Lifeline or one of its official agents. You will need to send the cylinder, along with nozzles to be serviced.

- If your Zero 2000 system is discharged, it must be returned only to Lifeline or one of its agents for refilling.

Your Zero 2000 system will be rejected from scrutineering if:

- The gauge reads in the red sector.
- The tamper-proof label is not intact.
- Non-genuine Lifeline parts have been used.
- The contents are below the specified weight.
- The extinguisher label is worn or damaged.
- The extinguisher is not within service date.
- The system is in poor condition.