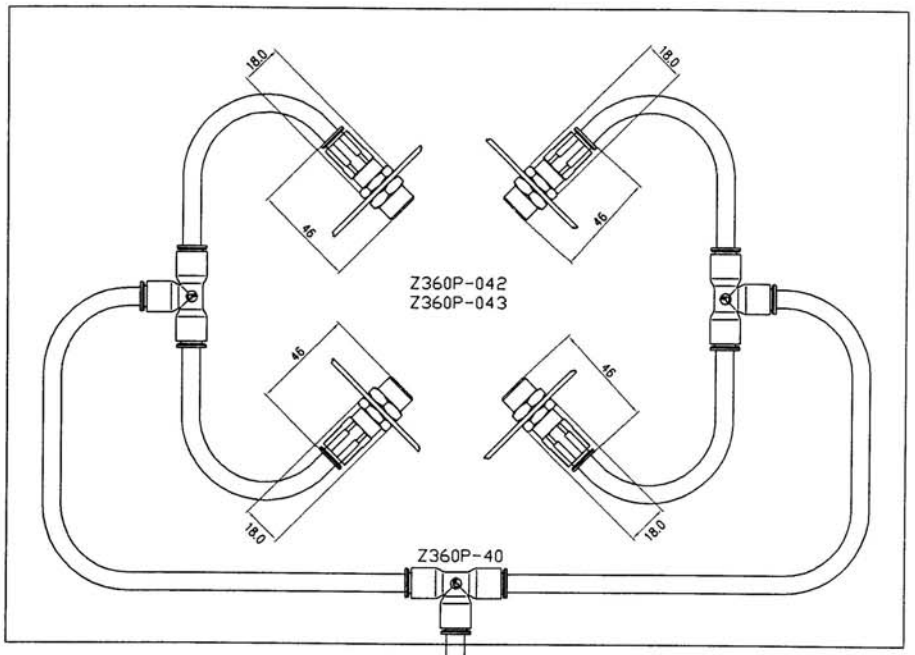
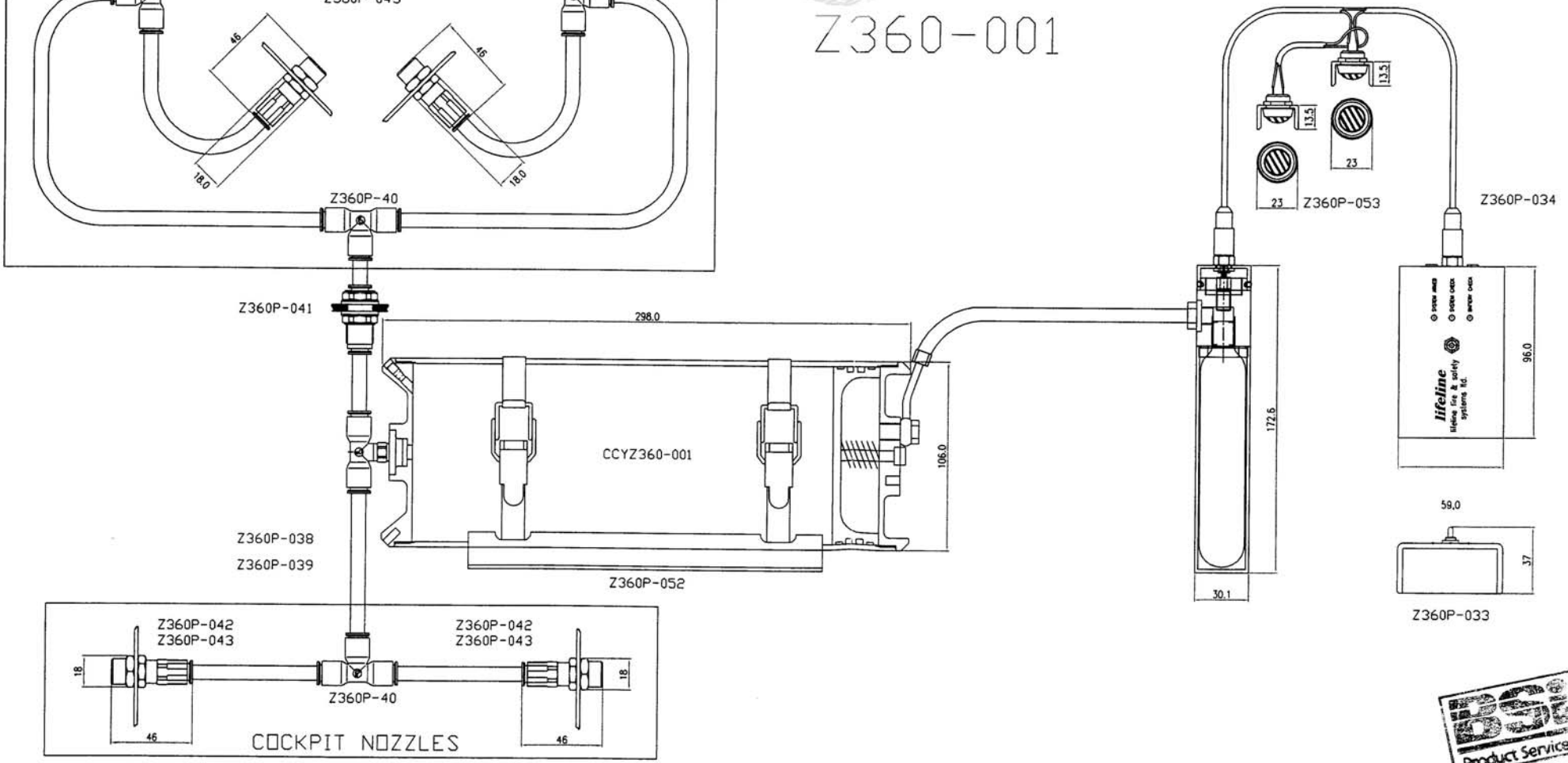
ENGINE COMPARTMENT NOZZLES

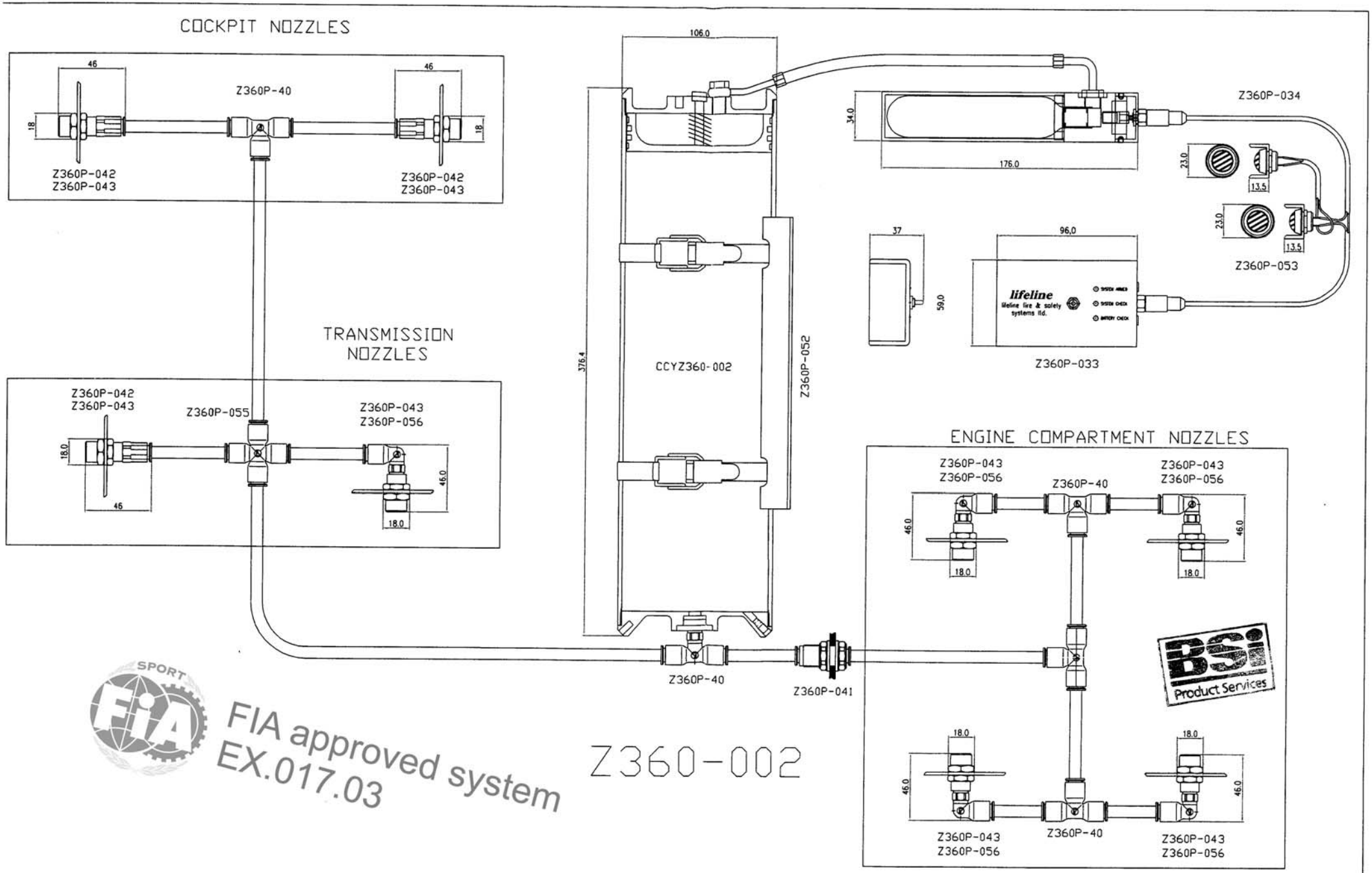


FIA approved system
EX.017.03

Z360-001



lifeline FIRE AND SAFETY SYSTEMS LTD. BURNSALL ROAD, COVENTRY, CV5 6BU Tel: +44 (0) 24 7671 2999 Fax: +44 (0) 24 76712998	COMPONENT / TITLE ZERO 360 COMPLETE ASSEMBLY	SHT 1 OF 1 DRG. No. ----------	DRAWN M.D. DATE Mar.'04. THIRD ANGLE PROJECTION	CHECKED DATE QTY	MATERIAL. ---------- FINISH ----------	CUSTOMER DATE NAME SIGNATURE	



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Lifeline®
Fire & Safety Systems Ltd.

zero 360

All Systems

FITTING INSTRUCTIONS

PLEASE READ CAREFULLY BEFORE ATTEMPTING TO INSTALL YOUR SYSTEM

Thank you for purchasing an FIA approved Zero 360 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 affect 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 at:

Lifeline Fire & Safety Systems Ltd
Burnsall Road
Coventry CV5 6BU
Tel: 024 7671 2999 Fax: 024 7672 2998
Website: www.lifeline-fire.co.uk
Email: sales@lifeline-fire.co.uk

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 allow outside assistance to be given, is the main purpose.

CONTENTS

Page No.

4	Systems Covered
4	Fitting Instructions – Zero 360 Systems
5	Mechanical Systems
5	Electrical Systems
7	Wiring Diagram
9	Nozzles & Locations
10	Tubing & Connections
11	Remote Charge Systems - Indication system has been activated
12	Kit Contents
13	Technical Specification
14	Maintenance
Annex	System Schematic Diagrams

Systems Covered by these Instructions

 LL103-225-001 LL103-300-001 Zero 360 2.25kg & 3kg Remote Discharge Piston Systems	 LL103-225-002 LL103-300-002 Zero 360 2.25kg & 3kg Remote Discharge CD Systems
 LL103-225-003 Zero 360 2.25kg Mechanical Stored Pressure	 LL103-225-004 Zero 360 2.25kg Electric Stored Pressure

FITTING INSTRUCTIONS

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

See page 12 for kit component listings.

Remove the extinguisher from its mounting brackets by undoing the over-centre clips. Decide upon the best position for the extinguisher to be mounted bearing in mind that the extinguisher label, showing its contents etc and piston location indicator should be clearly visible. Securely mount the brackets for the extinguisher and remote charge unit and replace the system. Brackets should be bolted to the vehicle and within the safety structure where applicable.

Mechanical Systems

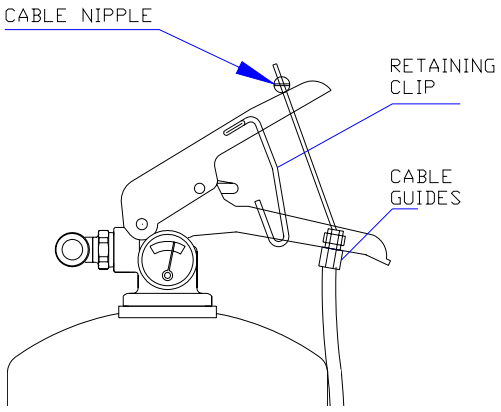
Mechanical systems are operated using pull cables. Each system is supplied with two cables, one being 6ft in length, and a 12ft length cable. Decide upon the best position for the pull cables to be mounted, bearing in mind that the cable mounted in the cockpit should be accessible to the driver and/or co-driver when seated 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 (below windscreen), or 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 sufficient 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 thus ensuring easy operation of the cables. The end of each 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 to prevent seizure and checked for smooth operation. Please remember to disconnect cables at the discharge head when carrying out these maintenance operations and to reconnect afterwards.

Mechanical Discharge Head Detail



Electrical Systems

Mount the power pack so that it is clearly visible. Mount the switches to the vehicle. The cockpit switch should then be mounted so that it is within easy reach of the driver and/or co-driver when sitting in the normal position and wearing fully fastened seat belts.

Wiring of System
See wiring diagrams on page 7/8.

All Lifeline Zero 360 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 electrical interference from the vehicle's power source.

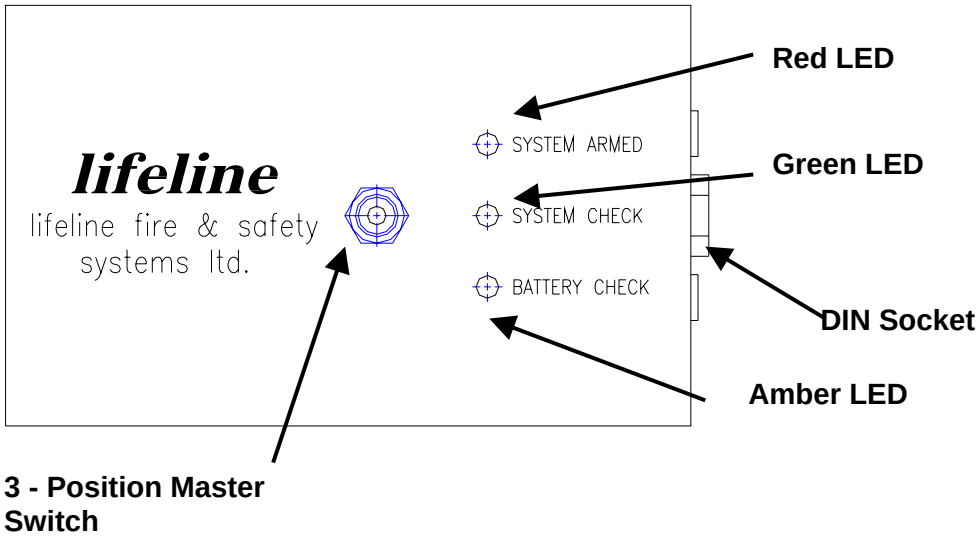
Once the system has been wired in accordance with the wiring diagram shown on page 7/8, a test check should be carried out to ensure that the system will fire properly. Before you start the check procedure, ensure that the bottle and the power pack are connected.

On top of the power pack is a 3-position switch. This provides checking facilities for the battery and wiring. If the switch is pulled against its spring towards the amber LED, the LED will light if there is sufficient current in the battery. IF THE AMBER LED DOES NOT LIGHT, OR IMMEDIATELY GOES OUT, IT SHOULD BE REPLACED. THE BATTERY SHOULD BE OF THE MAGANESE/ALKALINE LONG LIFE TYPE ONLY, TYPE PP3.

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 connected, press one of the firing buttons and the green LED should light. If it does not there is a break in the circuit. If the green LED 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.

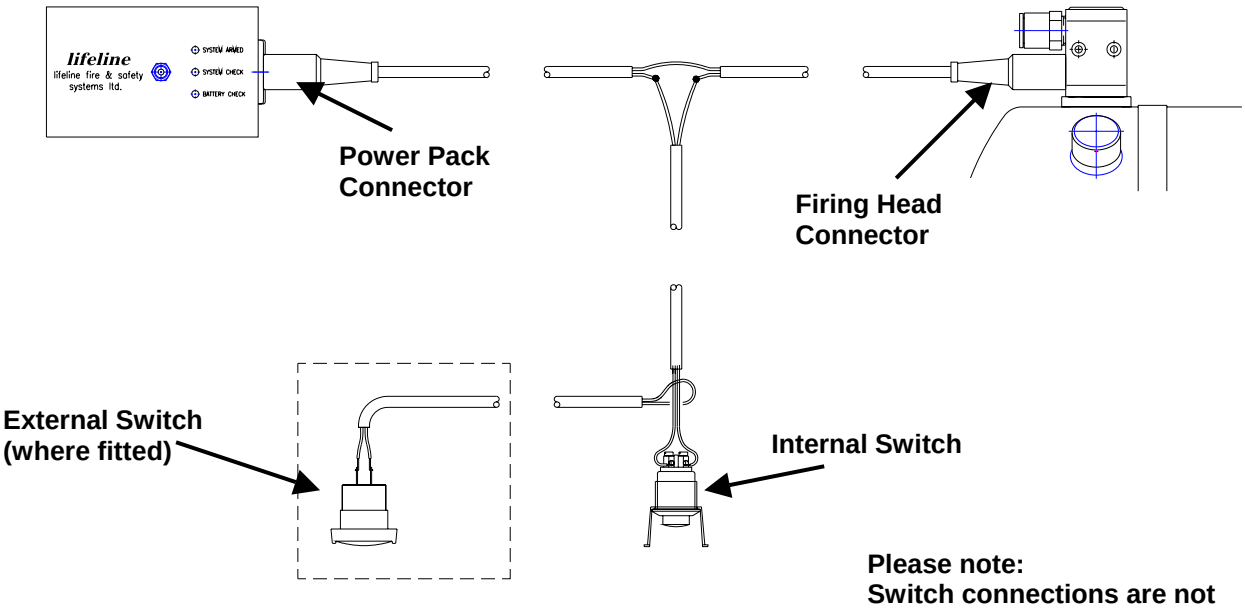
If for any reason the green LED does not illuminate when the system is tested, check the wiring against the wiring diagram shown on page 7/8. If the problem persists, consult Lifeline or an agent.
To arm the system place the switch in to the 'SYSTEM ARMED' position. The red LED will illuminate to indicate the system is armed.
To prolong battery life and prevent accidental activation, it is recommended that the power pack switch be in the 'SYSTEM ISOLATED' position and the plug disconnected when the vehicle is not being used.

Power Pack



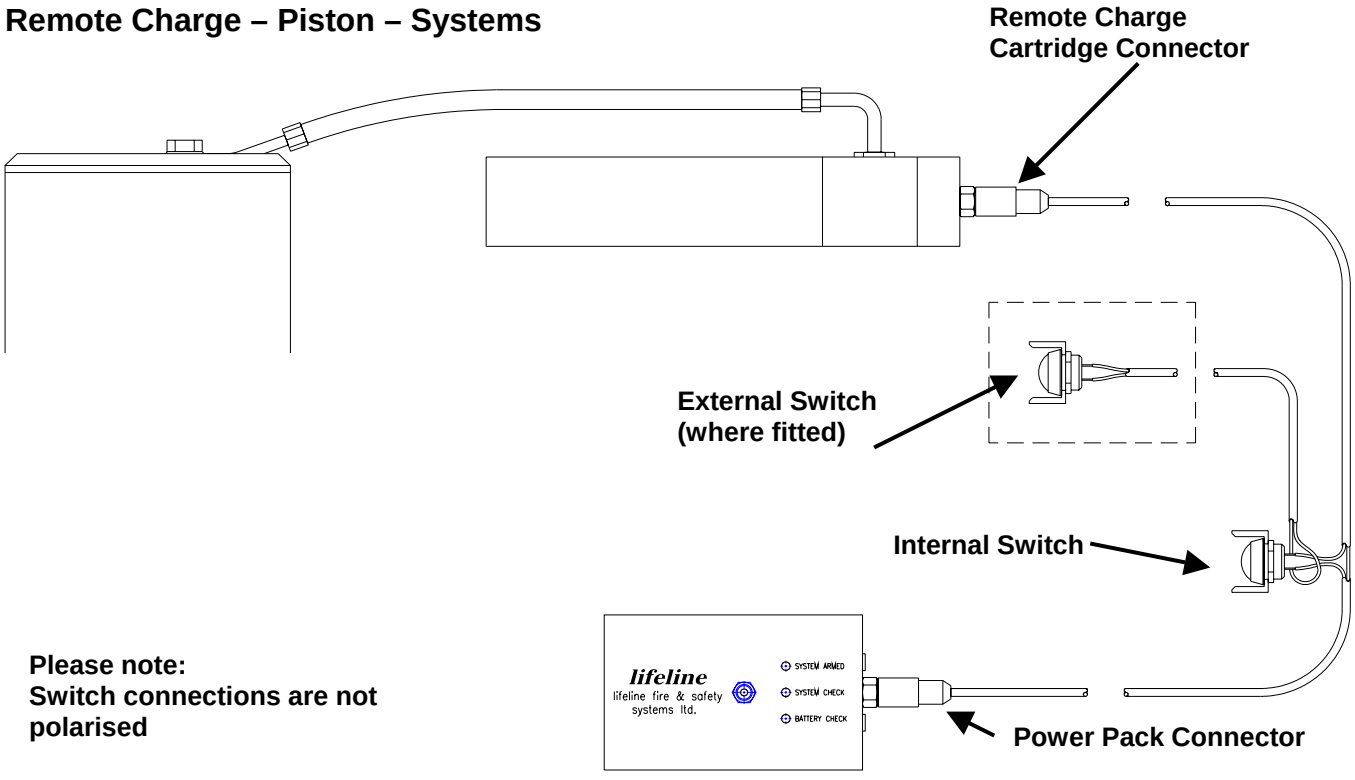
Wiring Diagrams

Stored Pressure Systems



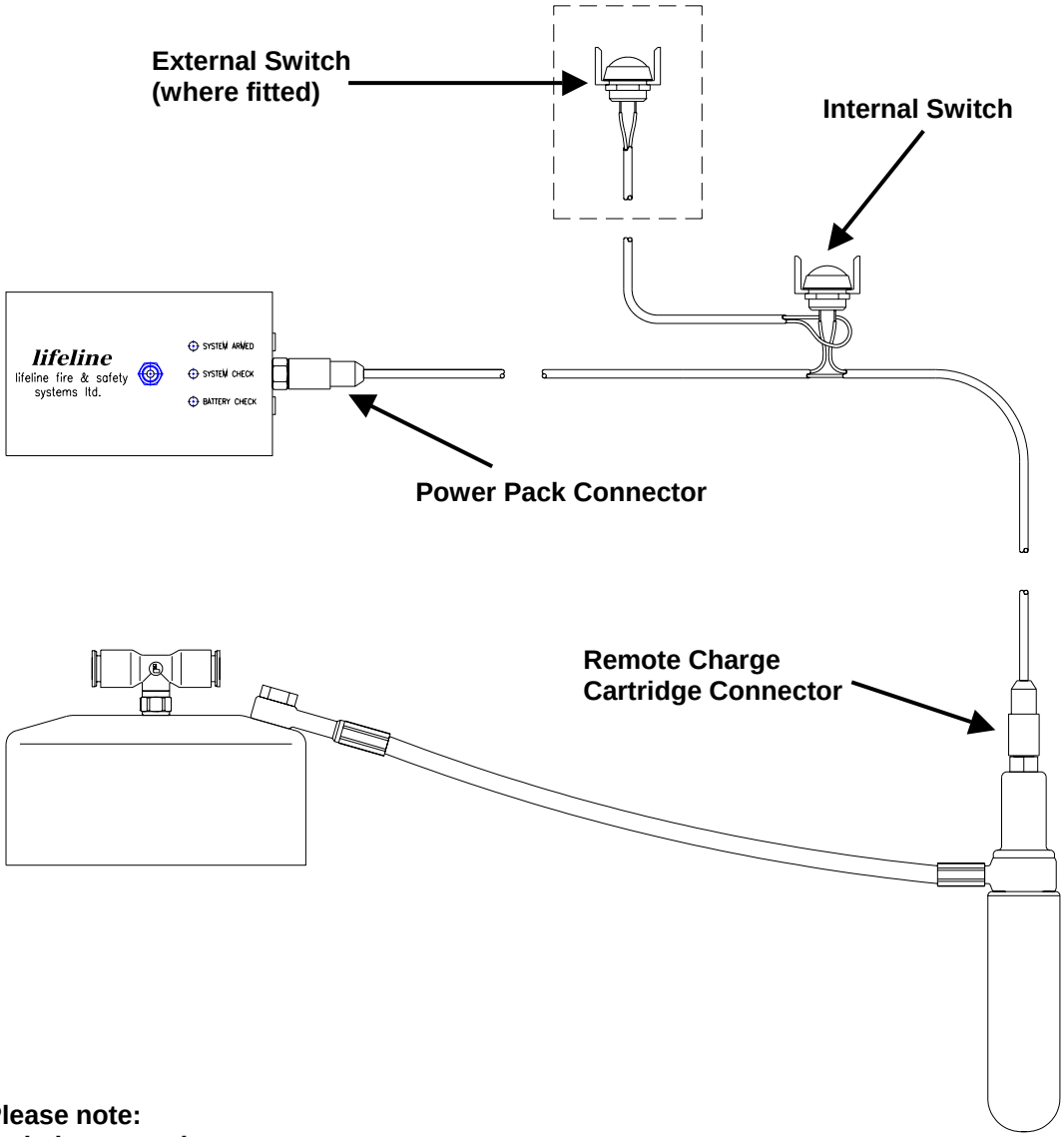
Please note:
Switch connections are not polarised

Remote Charge – Piston – Systems



Please note:
Switch connections are not polarised

Remote Charge - CD - Systems



Please note:
Switch connections are not polarised

NOZZLES

It is important that the correct nozzles supplied with the system are used. The nozzles will produce a flat 110º spray pattern. The nozzles must be positioned so that the slot through the center axis of the outlet side of the nozzles is horizontal.
See diagram below.

FIGURE 1

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.

Cockpit Nozzle Location for Closed Cars
Two nozzles must be mounted in the cockpit area. We recommend that these are mounted so that they spray horizontally in to the footwell area of both the driver and passenger compartment. See figure 2.

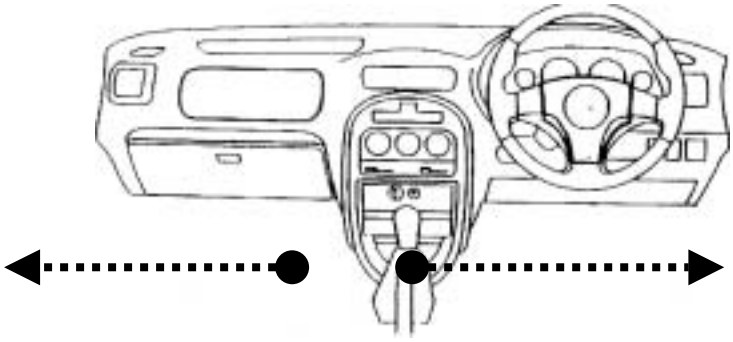
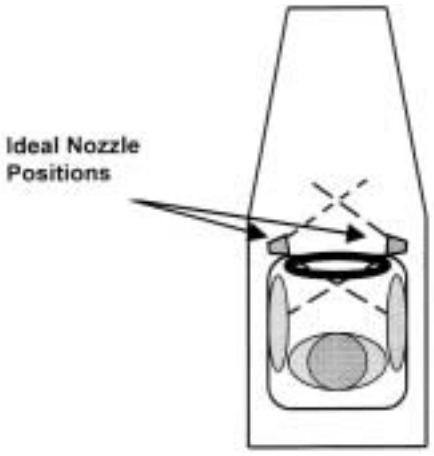


FIGURE 2

ARROWS DENOTE NOZZLE LOCATION AND DIRECTION
ENSURE THE NOZZLES ARE ORIENTATED CORRECTLY

Cockpit Nozzle Location for open cars
Both nozzles should be mounted in the cockpit area of an open car. The nozzle should be aimed at the driver's midriff, 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.

Four nozzles must be mounted in the engine compartment. These nozzles spray all around the engine, ensuring full coverage. We recommend that the nozzles are mounted diagonally apart and approximately 200mm below the bonnet shut line. See figure 3.

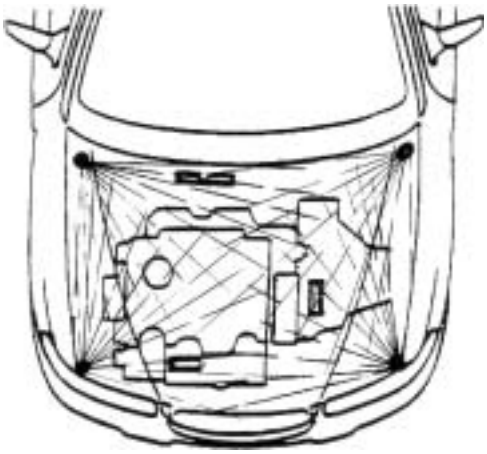


FIGURE 3
● DENOTES NOZZLE LOCATION
ENSURE NOZZLES ARE ORIENTATED AS PER FIGURE 1

3Kg Systems

These systems are supplied with an additional 2 nozzles. These can be positioned at the installers choice of location, either to provide suppression at other risk areas such as fuel cell or high pressure hydraulic systems, or to supplement the nozzles in the engine compartment or cockpit.

Tubing

Each extinguisher kit is supplied with a roll of plastic coated aluminium tube, and a roll of protective heat resistant overbraid. We strongly recommend that you use this overbraid as it will protect the tube to temperatures up to 450ºC. 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 90º and that the outside diameter has retained its circular shape. Cutting tool P/N: LL991-101-001 is available from Lifeline. 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.

Remote Charge Systems – Indication that system has been activated

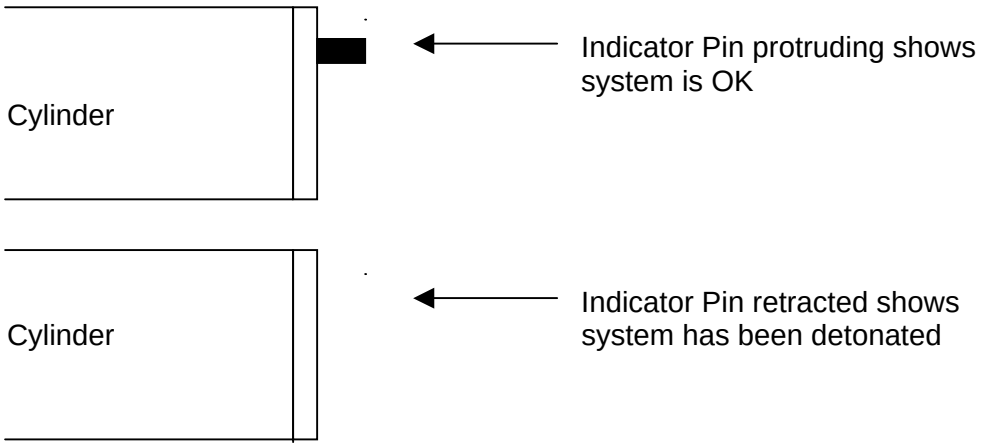
Remote charge systems are normally un-pressurised and therefore not supplied with a gauge. To check for contents or whether the system has been activated the following checks should be regularly carried out.

Piston Remote Charge Systems.
In order to show that the system is full a mechanical indicator has been incorporated. When the system is full the indicator will stand proud of the end cap. Once the system has been detonated this will spring back into the end cap and cannot be seen.

To check the integrity of the system we advise the following: -

1. Check the indicator is protruding from the end cap.

2. Weigh the cylinder and compare the actual weight to that stated on the cylinder label. If the weight is greater than 5% less than the weight indicated on the label the extinguisher should be taken out of service for repair.



CD Remote Charge Systems

Weigh the cylinder and compare the actual weight to that stated on the cylinder label. If the weight is greater than 5% less than the weight indicated on the label the extinguisher should be taken out of service for repair.

KIT CONTENTS

2.25kg Zero 360 Remote Charge Piston

1	901-225-001	Remote cartridge assy with link hose
1	941-000-001	Power pack
1	942-100-001	Cockpit switch c/w Plastic Bezel
1	942-100-002	External Waterproof Switch
2	943-101-001	Plug & lead assembly, Standard
6m	951-101-008	8mm Semi-rigid tube
6m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-002	8mm Bulkhead fitting
8	955-300-001	Zero 360 Nozzle
1	951-200-004	Pipe clip, pack
1	990-100-001	Decal pack

3.0kg Zero 360 Remote Charge Piston

1	901-300-001	Remote cartridge assy with link hose
1	941-000-001	Power pack
1	942-100-001	Cockpit switch c/w Plastic Bezel
1	942-100-002	External Waterproof Switch
2	943-101-001	Plug & lead assembly, Standard
8m	951-101-008	8mm Semi-rigid tube
8m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-007	8mm 4 Way Connector
1	952-408-002	8mm Bulkhead fitting
5	955-300-001	Zero 360 Nozzle, Straight Inlet
3	955-300-002	Zero 360 Nozzle, 90 degree Inlet
1	951-200-004	Pipe clip, pack
1	990-100-001	Decal pack

2.25kg Zero 360 CD Remote Charge

1	901-225-003	Remote cartridge assy with link hose
1	941-000-001	Power pack
1	942-100-001	Cockpit switch c/w Plastic Bezel
1	942-100-002	External Waterproof Switch
2	943-101-001	Plug & lead assembly, Standard
6m	951-101-008	8mm Semi-rigid tube
6m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-002	8mm Bulkhead fitting
8	955-300-001	Zero 360 Nozzle
1	951-200-004	Pipe clip, pack
1	990-100-001	Decal pack

3.0kg Zero 360 CD Remote Charge

1	901-300-003	Remote cartridge assy with link hose
1	941-000-001	Power pack
1	942-100-001	Cockpit switch c/w Plastic Bezel
1	942-100-002	External Waterproof Switch
2	943-101-001	Plug & lead assembly, Standard
8m	951-101-008	8mm Semi-rigid tube
8m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-007	8mm 4 Way Connector
1	952-408-002	8mm Bulkhead fitting
5	955-300-001	Zero 360 Nozzle, Straight Inlet
3	955-300-002	Zero 360 Nozzle, 90 degree Inlet
1	951-200-004	Pipe clip, pack
1	990-100-001	Decal pack

2.25 kg Zero 360 Electrical Stored Pressure

1	941-000-001	Power pack
1	942-100-001	Cockpit switch c/w Plastic Bezel
1	942-100-002	External Waterproof Switch
2	943-101-001	Plug & lead assembly, Standard
6m	951-101-008	8mm Semi-rigid tube
6m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-002	8mm Bulkhead fitting
6	955-300-001	Zero 360 Nozzle
1	951-200-004	Pipe clip, pack
1	990-100-001	Decal pack

2.25 kg Zero 360 Mechanical Stored Pressure

1	935-100-001	Pull cable 6ft
1	935-100-002	Pull cable 12ft
6	951-101-008	8mm Semi-rigid tube
6m	951-300-001	Overbraid, heat protective
4	952-408-001	8mm Equal T Connector
1	952-408-002	8mm Bulkhead Fitting
6	955-300-001	Zero 360 Nozzle
5	951-200-004	Pipe clip, pack
1	990-100-001	Decal Pack

TECHNICAL SPECIFICATION OF ZERO 360

USAGE	Racing and Rally cars - all groups
CONTENTS	Liquid Gas HFC-236fa Hexafluoropropane
DISCHARGE AREAS	Engine compartment and drivers compartment
DISCHARGE TYPE	The product is stored in a container and discharged through spray nozzles, as a liquid turning to gas at exit.
COMPOSITION	1,1,1,3,3,3 – Hexafluoropropane (HFC 236 fa)
O D P	(Ozone Depletion Potential) NONE
OPERATING TEMPERATURE	- 30 - + 60 degrees Centigrade
FREEZING POINT	**-** 103 degrees Centigrade
CRITICAL TEMPERATURE	124:9 degrees Centigrade
PHYSIOLOGICAL PROPERTIES	Zero 360 poses no acute or chronic hazard when it is handled in accordance with Lifeline's recommendations and when the exposure is maintained below the recommended limits. The Lifeline acceptable exposure limit (AEL) is 1,000 PPM (8- or 12 – hour time weighted average)

A copy of the Zero 360 material safety data sheet can be obtained from Lifeline upon written request.

MAINTENANCE

Lifeline has taken the greatest possible care in designing and manufacturing your fire suppression system. To ensure that you get the best possible performance from your Zero 360 system, the following checks and maintenance procedures should be carried out before the vehicle is used.

- Remote Charge Systems - Check the piston indicator is protruding from the end cap (inlet side), or check the weight of the cylinder and compare with the weight written on the extinguisher label. If the actual weight is more than 5% less than the weight on the label return the extinguisher for checking.
- Pressurised Systems - Regularly check the pressure gauge indication is in the green sector.
- Check the integrity of the pipework and fittings
- Check the Zero 360 nozzles for obstruction and foreign bodies
- Check the cylinder for signs of damage

Your Zero 360 system should be serviced every two years. A service due date is marked on the extinguisher label. It is your responsibility 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. For remote charge systems you will need to return the cylinder together with the remote charge cartridge unit to be serviced.

If your Zero 360 system is discharged, it must be returned to Lifeline or one of its agents for refilling.

Your Zero 360 system will be rejected from scrutineering if:

- The gauge reads in the Red sectors, or the piston indicator does not protrude from the end cap (remote charge piston systems)
- The tamper proof labels are not intact
- Non genuine Lifeline parts have been used
- The contents are below the specified weight
- The extinguisher label is worn or illegible
- The extinguisher is not within service date
- The system is in poor condition.

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