



# MULTI-FLO AFFF SYSTEMS

FIA HOMOLOGATION NUMBER: - EX

## *Installation Instructions*

**Please read carefully before  
attempting to install  
your system.**



The Mill House, Tamworth Road, Packington Hayes  
Nr Lichfield, Staffordshire, England WS14 9PN  
Tel: 01543 434580 Fax: 01543 434581  
E-mail: [sales@spa-uk.co.uk](mailto:sales@spa-uk.co.uk)  
Web Site: [www.spa-uk.co.uk](http://www.spa-uk.co.uk)

## Firefighter/ Firesense-Response AFFF Multi-flo Systems covered by this manual

- |                          |               |  |
|--------------------------|---------------|--|
| <input type="checkbox"/> | MFE400A-4-A   | 4 Ltr Electrical/Auto Alloy              |
| <input type="checkbox"/> | MFM400A-4-A   | 4 Ltr Mechanical/Auto Alloy              |
| <input type="checkbox"/> | MFM400A-4     | 4 Ltr Mechanical Alloy                   |
| <input type="checkbox"/> | MFE400S-4-A   | 4 Ltr Electrical/Auto Steel              |
| <input type="checkbox"/> | MFM400S-4-A   | 4 Ltr Mechanical/Auto Steel              |
| <input type="checkbox"/> | MFM400S-4     | 4 Ltr Mechanical Steel                   |
| <input type="checkbox"/> | MFE75A-4-A    | 3.375 Ltr Electrical/Auto Alloy          |
| <input type="checkbox"/> | MFM75A-4-A    | 3.375 Ltr Mechanical/Auto Alloy          |
| <input type="checkbox"/> | MFM75A-4      | 3.375 Ltr Mechanical Alloy               |
| <input type="checkbox"/> | MFE75S-4-A    | 3.375 Ltr Electrical/Auto Steel          |
| <input type="checkbox"/> | MFM75S-4-A    | 3.375 Ltr Mechanical/Auto Steel          |
| <input type="checkbox"/> | MFM75S-4      | 3.375 Ltr Mechanical Steel               |
| <input type="checkbox"/> | MFE75A-4-A-SL | 3.375 Ltr Electrical/Auto Alloy Slimline |
| <input type="checkbox"/> | MFM75A-4-A-SL | 3.375 Ltr Mechanical/Auto Alloy Slimline |
| <input type="checkbox"/> | MFM75A-4-SL   | 3.375 Ltr Mechanical Alloy Slimline      |



The Mill House, Tamworth Road, Packington Hayes  
Nr Lichfield, Staffordshire, England WS14 9PN. UK

Tel: 01543 434580 Fax: 01543 434581

E-mail: [sales@spa-uk.co.uk](mailto:sales@spa-uk.co.uk)

Web Site: [www.spa-uk.co.uk](http://www.spa-uk.co.uk)

Thank you for purchasing a FireSense-Response AFFF Multi-flo System (which has been FIA homologated).

It is important that you read the following instructions carefully before attempting to install your fire suppression system.

The performance of this system will be affected if it is in anyway modified or tampered with it will void its homologation. Please ensure that should any parts need to be replaced, only genuine SPA FireSense-Response components are used.

Should you require any assistance, please do not hesitate in contacting SPA Design on 01543 434580.

#### IMPORTANT NOTE

The purpose of this along with any other vehicle fire suppression system is to provide sufficient time in which to control the fire to enable the occupants to leave the vehicle.

In ideal conditions, the fire will be extinguished completely but this can not be guaranteed. The main purpose is to curb the intensity of either an engine or cockpit fire to provide the means for the occupants to leave the vehicle or for outside assistance to be given.

## Automatic Head

The new activation valve fitted to certain models all ending with the letter A within this new range of systems has a special safety feature that does not interfere with the standard operating procedure of the fire suppression system.

The automatic activation feature is a stand alone activation that will operate independent of user input at a temperature specified by the manufacturer.

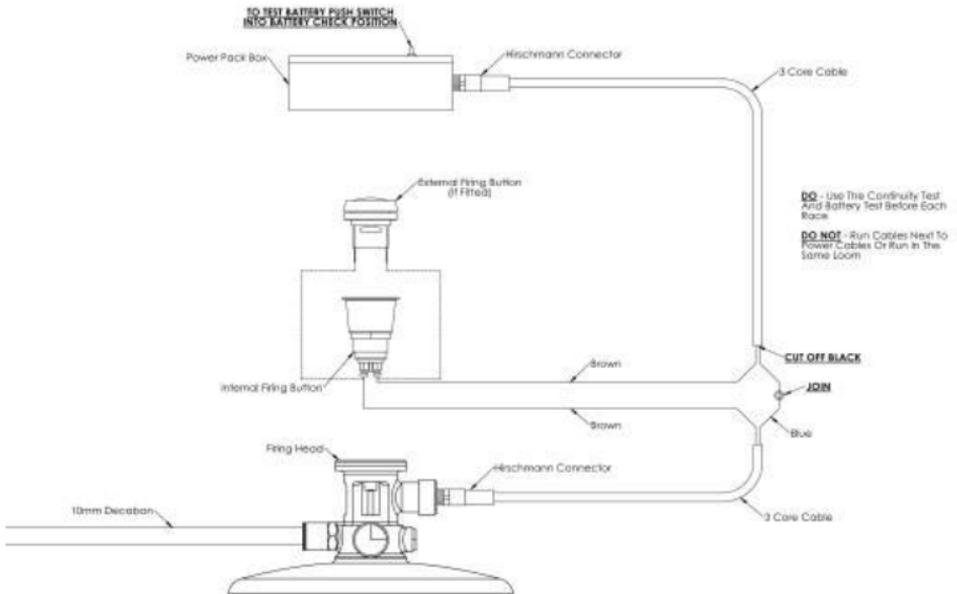
### IMPORTANT NOTE

The fire suppression system requires input by the user by either mechanical (cable pull) or electrical (switch) to operate, the automatic activation is a safety backup only, it is not the primary means of activation, the primary means of activation is the driver using the cable pull or electrical switch depending on model purchased.

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# SPA FIRESENSE-RESPONSE ELECTRICAL SYSTEM WIRING SCHEMATIC APPLIES TO ALL ELECTRIC MODELS



- To test the battery, push and hold control box switch upwards in the "Battery Check" position until yellow light flashes.
- If the extinguisher tubing is to be removed, push the black collet in and pull the tubing out at the same time.

**RECOMMENDED:** Use the continuity test and battery test before each race.

**DO NOT:** Run the cables next to power cables, or in the same loom.

# **ELECTRICAL FITTING INSTRUCTIONS**

Unpack all parts and check components against 'kit list'.

- Remove bottle from mounting brackets if fitted by undoing the wing nuts. Decide the best position for the extinguisher – IT IS RECOMMENDED THAT THE BOTTLE SHOULD BE MOUNTED IN THE FORE AND AFT DIRECTION OF THE VEHICLE.  
The extinguisher label, detailing the contents and the pressure gauge should be clearly visible for inspection, Mount the retaining brackets securely to the vehicle and put the bottle back into place.  
*(Refer to Figure 3.)*
- Mount the power pack in a clearly visible position.
- Switch with red plastic shroud to be fitted in the cockpit so that it is in easy reach of both the driver and/or co-driver when sitting in the normal driving position and wearing fully fastened seat-belts.
- The other switch with flexible red membrane (waterproof) is to be fitted to the outside of the vehicle, close to the exterior master switch (for activation by the Marshals).
- Once the system has been wired as per wiring diagrams *(refer to Figure 1 / 2)*, the following tests should be carried out to check the system is fitted correctly and will operate when required. *(See Page 5)*

## **SPA DESIGN FIRESENSE-RESPONSE** **ELECTRICAL DETAILS**

The SPA FireSense-Response system uses actuators to operate valves located within the pressurized container that contains the extinguishant. These are triggered remotely using a battery-powered power pack.

In order to guarantee reliable operation the connectors used are 1P67 and the actuators used are of a military specification with the system / battery test electronics integrated into the power pack.

The power pack electronics can test the continuity of the wiring, and also provides a high current pulse test to ensure system integrity before use. Unlike other systems, the battery test will not destroy or put an excessive drain on the battery during this critical test. These tests are performed using a three way switch on the power pack box and should be performed before each usage of the system, since the system is only as good as the battery that powers it and the integrity of the wiring loom and its connectors.

To check the condition of the battery press and hold up the switch on the power pack box in battery check position. **Every two seconds you will see a YELLOW light flash.**

If the light flashes very dimly the battery must be replaced.

**IF IN DOUBT REPLACE THE BATTERY !!!!**

To check the continuity of the wiring, ensure that the switch on the power pack box is in the **SYSTEM INACTIVE** position to ensure that the extinguisher is not fired.

Press the internal firing button and check that the **RED** light comes on, press the external firing button, and check that this also makes the **RED** light come on.

The external button must be positioned close to the exterior master switch.

When you are ready to race after all these checks push switch into system armed position, **the control box will not illuminate in the system armed position** if either internal or external switches are pressed the system will activate.

**DO** ensure that the wiring cables do not run next to looms especially if they contain ignition or battery cables

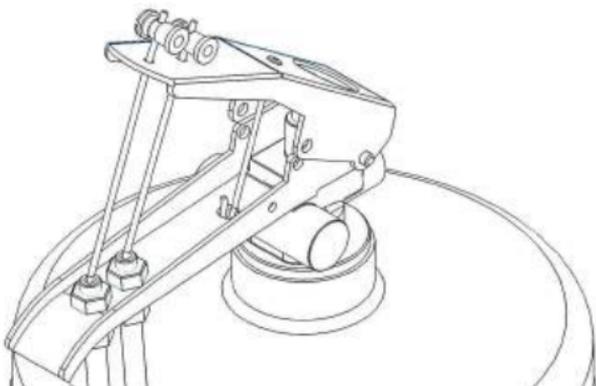
**DO** ensure that any exposed connections that are likely to get water sprayed are protected.

**DO NOT** allow cables to run through sharp edged apertures without protection

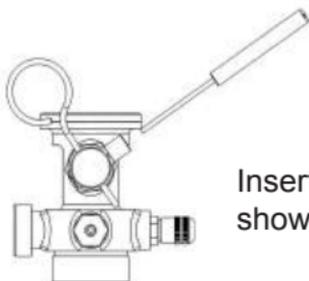
**DO NOT** fix cables to any surface that is likely to see excessive temperatures.

# MECHANICAL CABLE SETUP

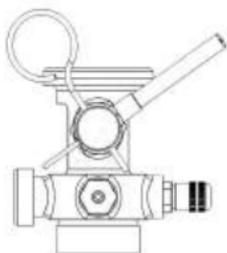
## LEVER VALVE



## MECHANICAL AUTO HEAD



Insert cable pull into hole location as shown.



Make sure Cable is secure.



Once cable is secure, remove safety pin before race, when race is finished replace safety pin.

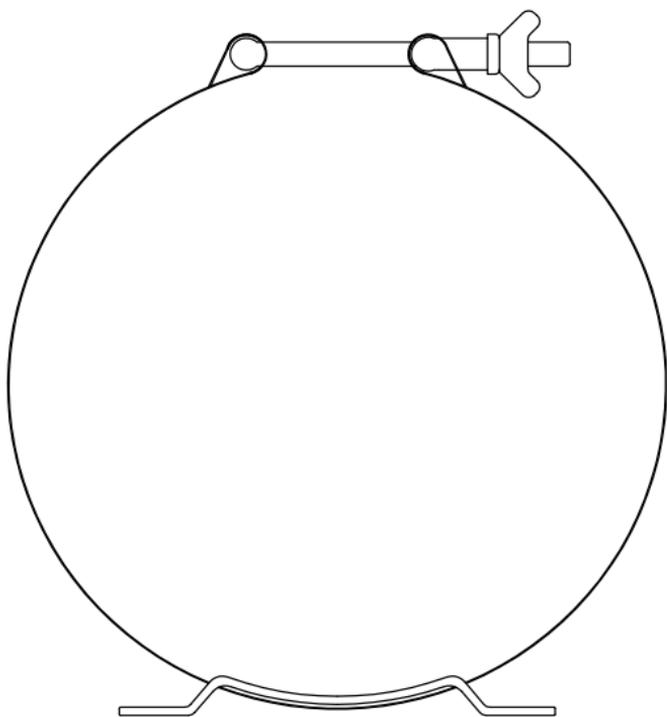
# **MECHANICAL SYSTEM**

The system uses two T-handle pull cables, one 6ft long and one 12 ft long.

- Remove bottle from mounting brackets if fitted by undoing the wing nuts. Decide the best position for the extinguisher – IT IS RECOMMENDED THAT THE BOTTLE SHOULD BE MOUNTED IN THE FORE AND AFT DIRECTION OF THE VEHICLE. The extinguisher label, detailing the contents and the pressure gauge should be clearly visible for inspection, Mount the retaining brackets securely to the vehicle and put the bottle back into place. (*refer to Figure 3*).
- Insert the end of the Decabon tube into the push-in fitting on the lever-valve and lay the length of the tube from the cylinder to the chosen location; plug the nozzle onto the free end of tube and orientate this to point the nozzles onto anticipated fire sources.
- Mount the 6-ft cable in the cockpit within reach of the driver and / or co-driver when sitting in the normal driving position wearing seat-belts. The other end of the cable is to be threaded through one of the adjusting screws on the handle of the lever-valve (on the cylinder). Then threaded through one of the holes in the other handle and the clamp screw made secure on cable against the underside in such a way that movement of the red pull handle will close the handles of the lever-valve, BUT allowing 6mm of free-play. CAUTION: do not allow this testing to actually move the handles or the valve may open and release the extinguishant (keep the safety pin in place).

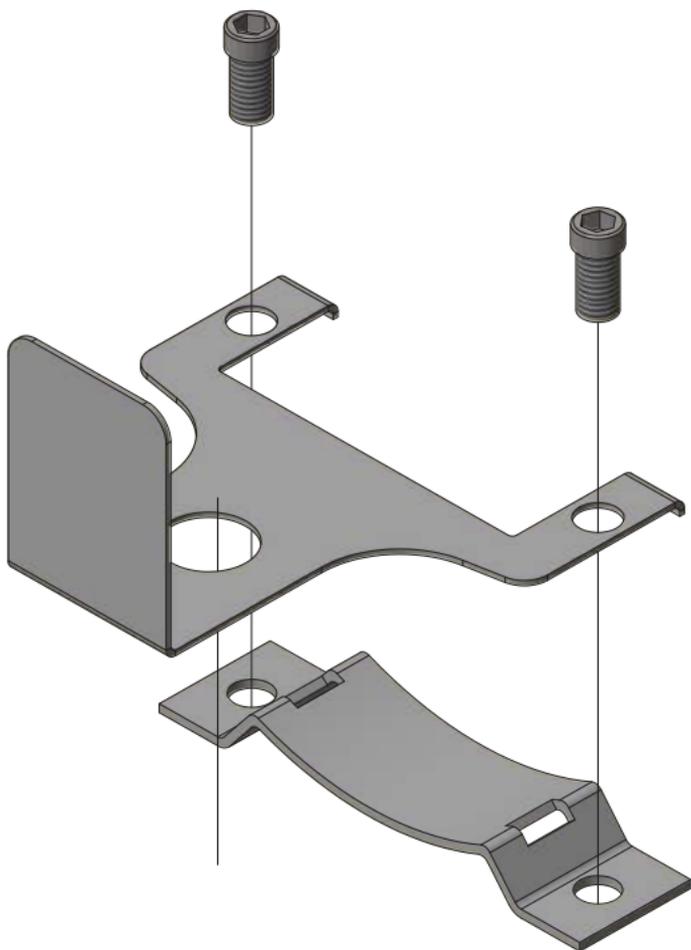
- Mount the 12-ft cable on the outside of the vehicle (close to the exterior master switch is the recommended position). Lay the cable inside the vehicle and connect to the lever-valve as above.
- Pull cables should be fitted in such a way that no kinks or 'S' bends are formed, which could cause malfunction.
- Removing the safety pin from the lever-valve leaves the system ready for use.
- **SAFETY WARNING Failure to remove safety pin will render the system inoperable when required.**

**EXTINGUISHER**  
**MOUNT BRACKET**



SP144 – 6" Cylinder Retaining Bracket  
SP148 - 5" Cylinder Retaining Bracket

**ANTI TORPEDO MOUNT MANDATORY**  
**ON ALL FIA SYSTEMS**



## **A.F.F.F. NOZZLES**

It is important that all of the nozzles provided in the fire system kit are used.

The nozzles will produce a fine atomized spray with the AFFF emerging as a milky white foam substance, which forms a film barrier starving the fire of oxygen. This foam spray has the capability of excellent fire out times and has a cooling effect, which can control re-ignition.

When locating the nozzles it should be noted that there is a 90° cone with a 1/2 meter spray.

Nozzles should not simply be supported by their own pipe work. Where necessary support the nozzle in a bracket.

Nozzles should be checked for damage/possible blockage. They should also be tested to ensure that they are in good working order.

Depending on the class of racing/rallying,(which is the competitors responsibility) e.g. International rallying, which needs a 4lt system, the engine bay must have 2 nozzles installed, with one each side of the motor and 2 nozzles installed in the cockpit.

For open cars, the system must include two nozzles one should be aimed at the drivers midriff with special care being taken not to spray into the drivers face.

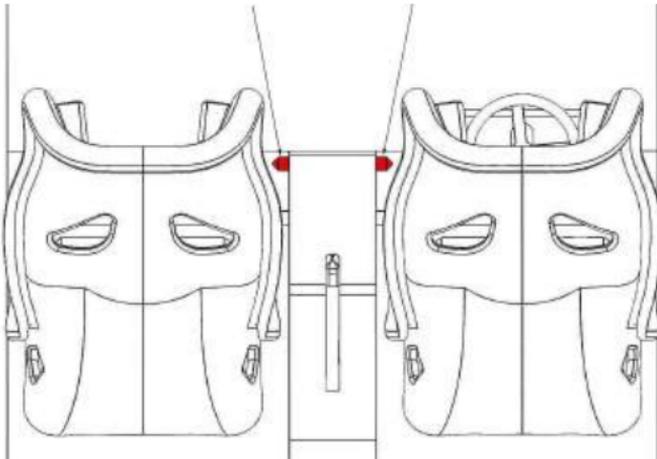
For saloon /closed cars 2 nozzles must be fitted within the cockpit area. Nozzles should be fitted either to the top of the roll bar main hoop (door B pillar) pointing inwards and downwards towards the foot of the diagonally opposite front roll bar hoop base (door A post) or either under the dashboard aiming at the drivers midriff.

These are guide lines for competitors using SPA Design fire suppression systems

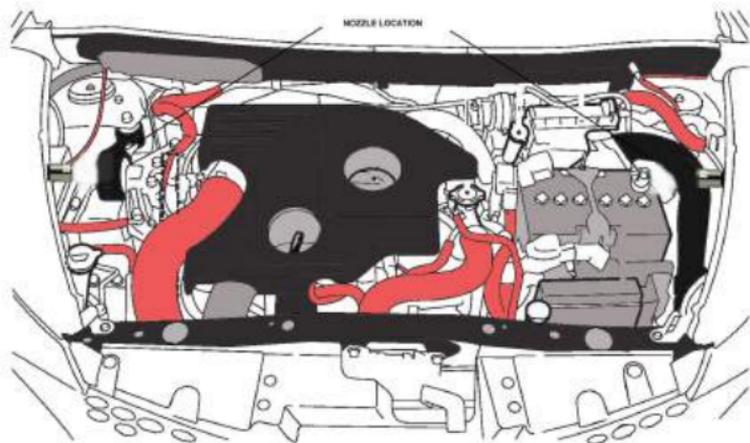
**IF IN DOUBT, ASK!!!**

Example of Cockpit nozzle location.

Nozzle location refer to Page  
13



## EXAMPLE OF ENGINE NOZZLE LOCATION



# **TUBING**

Each FireSense-Response System kit is supplied with Decabon tubing which is a coated aluminium tube which can be molded and flexed to suit this application. The FireSense-Response system has been designed and homologated using 10mm & 8mm dia tube. DO NOT substitute this tube for any other type.

## **TUBE CONNECTIONS**

All fittings for tube to nozzles and bottle are of the push-in type. Insert the tube into the fitting, push firmly until it clicks. Once in you should not be able to pull it out.

To remove the tubing, push the tube into the fitting and at the same time push/pull the black collet back towards the fitting and then pull the tube from the fitting.

# **KIT LISTS**

## **4 LTR & 3.375 Ltr Multi-Flo Electrical**

Electrical system comes fitted with firing head.

- 2 x SP144 – 6” Cylinder Retaining Bracket
- 2 x SP319 – 6” Anti Torpedo Mounting Tab
- 1 x SP007H – Power Pack (Hirschman as standard)
- 2 x SP005H – Plug & Lead
- 1 x SP011 – Internal Fire Button
- 1 x SP012 – External Fire Button
- 4.5 x SP016 - 8mm Decabon Tubing (Mtr)
- 0.5 x SP072 - 10mm Decabon Tubing (Mtr)
- 4 x SP031 – 8mm Nozzle
- 2 x SP028 – 8mm Tee
- 1 x SP029 – 8mm Bulkhead Fitting
- 1 x SP183 - 10mm-8mm Y Piece connector
- 1 x SP017 – ‘E’ location sticker
- 1 x SP129 – Small ‘E’ Location Sticker

## **4 Ltr & 3.375 Ltr Multi-Flo Mechanical**

Mechanical System comes fitted with Lever Valve or Mechanical Head

- 2 x SP144 – 6” Cylinder Retaining Bracket
- 2 x SP319 – 6” Anti Torpedo Mounting Tab
- 1 x SP018 - 6ft Pull Cable
- 1 x SP019 – 12ft Pull Cable
- 4 x SP031 – 8mm Nozzle
- 2 x SP028 – 8mm Tee Piece
- 1 x SP029 – 8mm Bulkhead Fitting
- 1 x SP183 - 10mm-8mm Y Piece connector
- 4.5 x SP032 – 8mm Decabon Tubing (Mtr)
- 0.5 x SP072 - 10mm Decabon Tubing (Mtr)
- 1 x SP017 – ‘E’ Location Sticker
- 1 x SP129 – Small ‘E’ Location Sticker

# MAINTENANCE

To ensure maximum possible performance from your SPA Fire FireSense Response system, the following checks and maintenance procedures should be carried out.

- Regularly check the pressure gauge to ensure they are in the green section.
- Regularly check nozzles for debris or any obstructions externally and internally.
- Regularly check the integrity of the pipe work and fitting.
- Regularly check the cylinder for physical damage or corrosion.
- Regularly check the mounting brackets, retaining straps and bolts are secure.
- Regularly check your power pack control box and condition of the internal alkaline battery, the battery should be changed preferably every 6 months or if system has been fired off.
- Regularly check your wiring and electrical connectors for any damage.
- If the system has been activated the nozzles and pipe work should be washed through with fresh water and then cleared with an air line if possible to avoid residue of the extinguishant crystallizing in the pipe work or nozzles.
- Your SPA fire suppression system must be serviced every 2 years, a service due date is written on the contents label located on your cylinder. It is up to you to ensure the services are carried out at the correct intervals.
- If your system has been discharged or requires a 2-year service you must return it to SPA or an approved agent of SPA fire suppression systems.

## NOTES

Please ensure that you monitor the following, as you **may not** pass scrutineering **if**:

- The needle on the gauge is in the red section
- The bottle contents label is worn, damaged or unreadable.
- The unit is not within the service date.
- The system is in a poor condition

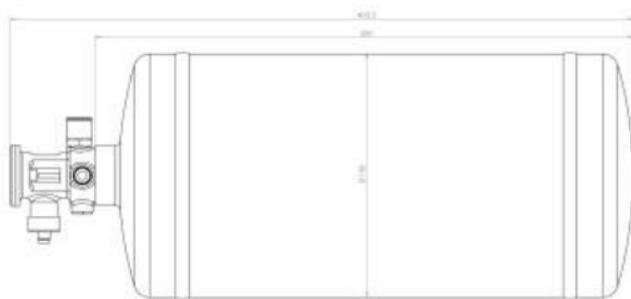
## BOTTLE DIMENSIONS

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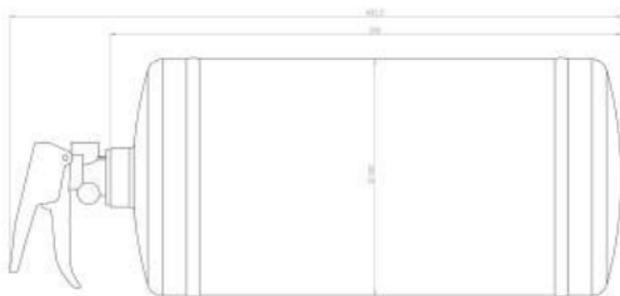
T Ø075A-4-A  
MFM75A-4-A



MFE400S-4-A  
MFM400S-4-A

MFE75S-4-A  
MFM75S-4-A

# BOTTLE DIMENSIONS



MFM400S-4  
MFM75S-4



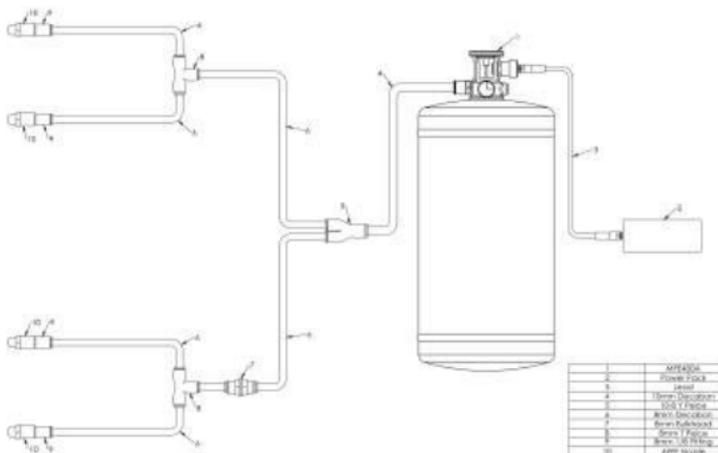
MFM400A-4  
MFM75A-4

## BOTTLE DIMENSIONS



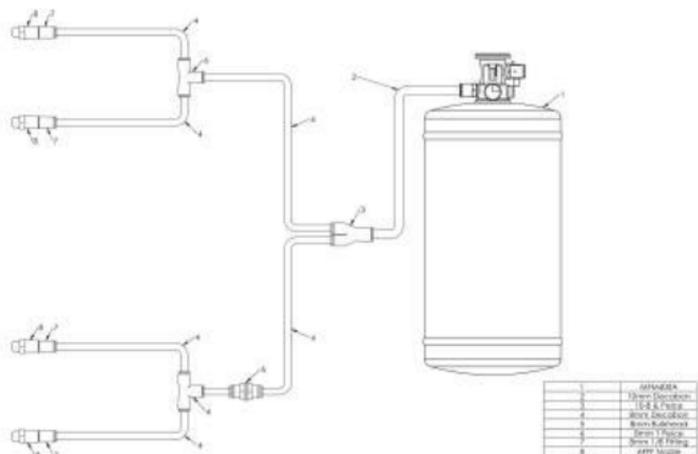
MFE75-A-4-A-SL  
MFM75A-4-A-SL

# Pipework and Nozzle Layout Electrical and Mechanical Systems



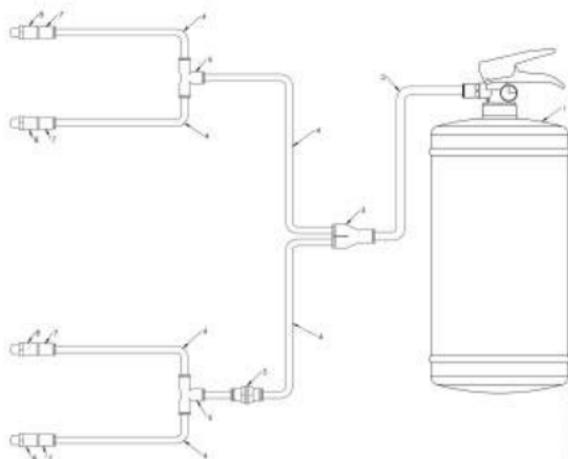
MFE400A-4-A  
MFE75A-4-A

MFE400S-4-A  
MFE75S-4-A  
MFE75A-4-A-SL



MFM400A-4-A  
MFM75A-4-A

MFM400S-4-A  
MFM75S-4-A  
MFM75A-4-A-SL



MFM400S-4  
MFM400A-4  
MFM75S-4  
MFM75A-4  
MFM75A-4-SL

1	Nozzle
2	Drive Decoupler
3	1/2" Tee
4	1/2" Coupler
5	Drive Shaft
6	1/2" Tee
7	1/2" Tee
8	1/2" Tee

# ***SAFETY DATA SHEET FOR AFFF*** **(Aqueous Film Forming Foam)**

<b>APPLICATION</b>	Autosport industry – including saloon, single seaters and other racing cars.
<b>CONTENTS</b>	Hydral AR 3x3 Low Viscosity AFFF, Water
<b>COMPOSITION</b>	Water, Ethaned ol, Ethylene glycol, Urea, Sod um Monodecylsulfate, Diethylene Glycol Monobutyl Ether, Caprylcapr yl Glucos de
<b>APPEARANCE</b>	Clear Liquid with a hint of blue
<b>pH</b>	Approx. 6.5 – 8.5
<b>BOILING POINT</b>	100°C (initial)
<b>VAPOUR PRESSURE</b>	Approx. 17.6 mm Hg Calc @ 20°C
<b>WATER SOLUBILITY</b>	Miscible
<b>FREEZING POINT</b>	-10°C
<b>PHYSIOLOGICAL PROPERTIES</b>	Non-harmful.

# **SERVICE AND REFILL AGENTS FOR SPA FIREFIGHTER/FIRESENSE-RESPONSE SYSTEMS.**

## **ATS MOTORSPORT**

30 SCHOONGEZICHT RD  
BERGBRON  
JOHANNESBURG  
SOUTH AFRICA  
PH : 0027 11 726 6314  
FAX : 0027 11 673 5185  
E : [atsleeke@global.co.za](mailto:atsleeke@global.co.za)  
www. [ats-motorsport.co.za](http://ats-motorsport.co.za)

## **DANIELSON EQUIPEMENT**

5 RUE CHAMP MAGNY  
58470 MAGNY COURS  
FRANCE  
PH : 0033 386 212 255  
FAX : 0033 386 212 265  
E : [contact@danielson-equipement.com](mailto:contact@danielson-equipement.com)  
www. [danielson-equipement.com](http://danielson-equipement.com)

## **R&R LOGISTICS NI LTD**

7 CADGER RD  
CARRYDUFF  
BELFAST  
BT8 8AU  
Contact: Jonathan Martin / Raymond Moore  
PH : 02895 213335  
E : [jonathan@rr-ni.com](mailto:jonathan@rr-ni.com)  
www. [raceandrally.com](http://raceandrally.com)

## **MURRAY MOTORSPORT**

UNIT 20 BEECHLAWN IND COMPLEX  
GREENHILLS RD  
DUBLIN 12  
EIRE  
PH : 00353 1 4500555  
FAX 00353 1 4500585  
E : [info@murraymotorsport.ie](mailto:info@murraymotorsport.ie)  
www. [murraymotorsport.ie](http://murraymotorsport.ie)

## **GULFSPORT RACING LLC**

UNIT 8  
INDUSTRIAL AREA 4  
STREET 29  
DUBAI, UAE  
Contact: Mike Scott  
PH : 00971 4 341 5438  
FAX: 00971 4 341 5438  
E : [mike.scott@gulf-sport.com](mailto:mike.scott@gulf-sport.com)

## **GIEFFE SRL**

VIASAN GIULIANO 39A  
15040 CASTELCERIOLO (AL)  
ITALY  
PH : 0039 0131 216505  
FAX : 0039 0131 216506  
E : [damiano.logiudice@gieffesrl.it](mailto:damiano.logiudice@gieffesrl.it)  
www. [gieffesrl.it](http://gieffesrl.it)

## **KH MOTORSPORT**

RAMSASEN  
665 91 KIL  
SWEDEN  
PH : 00465 421040  
FAX : 00465 421165  
E : [kh.msport@swipnet.se](mailto:kh.msport@swipnet.se)  
www. [khmotorsport.se](http://khmotorsport.se)

## **ORECA**

PARC DACTIVITES DE SIGNES  
AVE DE ROME  
83870 SIGNES  
FRANCE  
PH : 0033 494 885 801  
FAX : 0033 494 328 001  
E : [lcourdon@oreca.fr](mailto:lcourdon@oreca.fr)  
www. [oreca.fr](http://oreca.fr)

## **DES MOORE RALLYING**

46 CARRICKADUFF RD  
CARNAGH  
CO. ARMAGH  
BT60 3HZ  
PH : 02837 538633  
FAX : 02837 539286  
E : [des@dmrr.net](mailto:des@dmrr.net)  
www. [dmrr.net](http://dmrr.net)

## **RECHSTEINER RACING S A**

ZONE INDUSTRIELLE DES  
PRES MORES  
1315 LA SARRAZ  
SWITZERLAND  
Tel: 0041 21 866 1666  
Fax: 0041 21 866 1667  
Email: [pa.rechsteiner@rechrcing.com](mailto:pa.rechsteiner@rechrcing.com)  
Website: [www.rechrcing.com](http://www.rechrcing.com)

# **SERVICE AND REFILL AGENTS FOR SPA FIREFIGHTER/FIRESENSE-RESPONSE SYSTEMS.**

## **BOTH IMPORTS**

55 NORTH TERRACE  
HACKNEY  
SA 5069  
AUSTRALIA  
PH : 0061 8 8113 0600  
FAX : 0061 8836 28811  
E : [spalite@nttyres.com.au](mailto:spalite@nttyres.com.au)  
www. [nttyres.com.au](http://nttyres.com.au)

## **IMPORT PARTS**

SEPN 504 BL.C LOJA 34  
ED. MARIANA  
BRASILIA.DF  
BRAZIL  
CEP 70. 730 - 523  
PH : 0055 61 326 2614  
FAX : 0055 61 326 7717  
E : [ip-parts@uol.com.br](mailto:ip-parts@uol.com.br)  
www. [ip-part.com](http://ip-part.com)

## **SERVALL INC**

GREEN HILL  
ST. MICHAEL  
BARBADOS  
WEST INDIES  
PH : 001 246 424 5912  
FAX : 001 246 429 4854

## **MERLIN MAILORDER**

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CASTLE COMBE MOTOR RACING CIRCUIT  
NR CHIPPENHAM  
WILTSHIRE, SN14 7EX, UK  
PH: 01249-782101  
FAX: 01249782161

## **RACER INDUSTRIES**

286 SOUTHPORT NERANG ROAD  
SOUTHPORT  
QUEENSLAND 4215  
AUSTRALIA  
Tel: 0061 7 5591 8198  
Fax: 0061 7 5591 6458  
Email: [sales@racerindustries.com](mailto:sales@racerindustries.com)  
Website: [www.racerindustries.com.au](http://www.racerindustries.com.au)

## **NEIL ALLPORT MOTORSPORT**

34 OLIVE RD  
PENROSE  
AUCKLAND  
NEW ZEALAND  
PH : 00649 579 0113  
FAX : 00649 579 0114  
E : [sales@namSPORT.co.nz](mailto:sales@namSPORT.co.nz)  
www.namSPORT.co.nz

## **NOVA ENGINEERING**

220 - 1 OHMIKA  
OYAMA - CHO  
SUNTO - GUN  
SHIZUOKA 410 - 1308  
JAPAN  
PH : 0081 550 780329  
FAX : 0081 550 780064  
E : [nova-eng@mail.wbs.ne.jp](mailto:nova-eng@mail.wbs.ne.jp)

## **GUNNAR AASKOV MOTORSPORT**

CREDITOR 231826  
KORNMARKEN 2, GRAVENT  
DK-6040 EGTVED.  
DENMARK  
PH : 0045 75 55 32 90  
FAX : 0045 75 55 38 85  
E : [mail@aaskov-motorsport.dk](mailto:mail@aaskov-motorsport.dk)

## **SPA TECHNIQUE INC**

8225 INDY LANE  
INDIANAPOLIS 46214  
USA  
PH : 001 317 271 4941  
FAX : 001 317 271 7951  
E : [info@spatechnique.com](mailto:info@spatechnique.com)  
www.spatechnique.com

## **MARDI GRAS MOTORSPORT LTD**

UNIT 45 SILVERSTONE CIRCUIT  
TOWCESTER  
NORTHANTS  
NN12 8GZ  
Tel: 01327 858 006  
Fax: 01327 858 800  
Email: [info@mardigras.co.uk](mailto:info@mardigras.co.uk)  
Website: [www.mardigras.co.uk](http://www.mardigras.co.uk)

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ROESELARESTRAAT 180  
WEVELGEM 8560  
BELGIUM  
Tel: 0056 42 32 29  
Fax: 0056 42 00 83  
Email: info@allfiresecurity.be  
Website: www.allfiresecurity.be

## **H C GROUP**

222 SRI WORACHAK BLD NO G8  
LUANG ROAD  
DOMPRAB, BANGKOK  
THAILAND 10100  
Tel: 00662 223 1144  
Fax: 00662 226 3660  
Email: info@hcthailand.com  
Website: www.hcthailand.com

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SUITE 22 - 1 LEVEL 22  
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50250  
KUALA LUMPUR  
Tel: 00603 2026 1680  
Fax: 00603 2026 1681  
Email: mal@motorsportasia.com  
Website: www.afos.com

## **SPEEDMASTER**

7 HAREFIELD CLOSE  
NORTH EPPING  
NEW SOUTH WALES 2121  
AUSTRALIA  
Contact: Tony Dunn  
TEL: (02) 9868 5899  
Mob: 0404 007 768  
Email: tony@speedmaster.net.au

## **MTEC FORMULA TECHNOLOGY**

MAKELA RACING TEAM  
URHEILUTE 4  
RANTSILA 92500  
FINLAND  
Contact: Miikka Makela  
TEL +358 (0) 40 867 8197  
Email: miikka@makelracing.fi

## **THE CROSSLE CAR COMPANY LIMITED**

RORY'S WOOD  
OLD HOLYWOOD ROAD  
HOLYWOOD  
CO DOWN  
BT18 9QS  
Tel: 0044 (0) 28 9076 3332  
Fax: 0044 (0) 28 9076 0676  
Email: arnie@crossle.fsnet.co.uk  
Website: www.crossle.co.uk

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PUROKATU 9  
21200 RAISIO  
FINLAND  
Tel: 00358 500 525342  
Email: myynti@osatuontiracingshop.fi  
Website: www.osatuontiracingshop.fi

## **PERFORMANCE RACEGEAR**

246 GREAT EASTERN HWY  
ASCOT WA 6104  
AUSTRALIA  
Contact: Mike Nairn  
TEL: (08) 6461 6919  
Mob: 0424036418  
Email: mike@performanceracegear.com.au

## **AUTOSLANGER**

RANTZAUSGAVEVEJ 5  
8355 SOLBJERG  
DENMARK  
Contact: Benjamin Muusmann  
PH: +45 228678790  
E: benjamin@autoslanger.dk

## **REVOLUTION RACEGEAR**

592 WHITEHORSE ROAD  
MITCHAM  
VICTORIA 3132  
AUSTRALIA  
Contact: Tullio Salta  
Tel: 03 9873 8700  
Fax: 03 9873 8711  
Email: tullios@racegear.com.au  
Web: www.revolutionracegear.com.au

**SERVICE AND REFILL AGENTS FOR  
SPA FIREFIGHTER/FIRESENSE-RESPONSE  
SYSTEMS.**

**COMPLETE FIRE & SAFETY**

43 ALLARDICE STREET  
STONEHAVEN  
ABERDEEN, AB39 2AB  
SCOTLAND  
Contact: Garrith Glennie  
Tel: 01224 911 148  
Mob: 07518 339528  
Email: garrith@firesafety247.co.uk

**BERNICO INTERNATIONAL  
RACING**

VICTOR DUMONLAAN 6  
2830 WILLEBROEK  
ANTWERP  
BELGIUM  
Contact: Raf Van Belle  
Tel: +32 34558728  
Fax: +32 34550088  
Email: magazijn@bernico.be



The Mill House, Tamworth Road, Packington Hayes  
Nr Lichfield, Staffordshire, England WS14 9PN

Tel: 01543 434580 Fax: 01543 434581

E-mail: [sales@spa-uk.co.uk](mailto:sales@spa-uk.co.uk)

Web Site: [www.spa-uk.co.uk](http://www.spa-uk.co.uk)