

WILLANS®

LEADERS IN DRIVER SAFETY SINCE 1967

FOAMEX™

FIRE EXTINGUISHER SYSTEM INSTALLATION INSTRUCTIONS



IMPORTANT NOTE

The purpose of this and any other vehicle fire extinguisher system is to hold back the intensity of the fire. This offers a window of time in which the occupants may evacuate the vehicle until outside assistance can be given. Ideally the fire will be completely extinguished, but this cannot be guaranteed in all circumstances.




Willans
Stockbridge Racing Ltd
7 New Mills Ind. Est.
Post Office Road
Inkpen
Hungerford
Berkshire
RG17 9PU

Web: www.willans.com
Email: sales@willans.com

Thank you for purchasing a Willans Fire Extinguisher System. It is important that you read these instructions carefully before attempting to install your extinguisher system.

Modifying or tampering with the system could seriously hamper its performance or render it inoperable and is therefore strictly forbidden. If parts of the system need to be replaced, only genuine Willans fire extinguisher components should be used. Spare parts are available directly from Willans or through one of our authorised distributors.

Throughout these instructions the following symbols are used to aid the reader:

-  Note
-  - Warning
-  - Important

Contents

Fitting Instructions.....	3
Cylinder mounting	3
Electrical System Components	3
Wiring and testing.....	3
Mechanical System components.....	4
Nozzles.....	5
Tubing.....	7
Tube Connections	7
Maintenance.....	7
Technical Specification.....	9
Kit Contents	10
Wiring and Layout Diagrams.....	11

Fitting Instructions

Carefully unpack the kit and lay out all the components. Check that your kit is complete.



You can check the contents of your kit by using the component list on page 10.

Cylinder Mounting

Remove the extinguisher cylinder from its cradle by undoing the over-centre clips. Decide on a suitable location for the cylinder and securely mount the extinguisher cradle so that the bottle will orientate in the fore-aft direction in the vehicle. The bracket should be bolted to the vehicle and within the safety structure where applicable. Four small holes are provided in the bracket as a guide to where to drill holes for the mounting bolts. Replace the bottle in the bracket and secure with the over-centre clips.

- ! The extinguisher label and pressure gauge should be clearly visible whilst the cylinder is mounted in the vehicle.

Electrical System Components

Mount the firing box in an accessible position. The cockpit switch should then be mounted on the dashboard 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 or harnesses. The LED supplied should be mounted in a clearly visible position next to the internal switch. This will indicate when the system is armed. For saloon and enclosed vehicles, mount the external switch close to the circuit breaker, ideally at the base of the windscreen support pillar. The switch should be identified using the 10cm 'E' decal supplied.



All Willans electrical extinguisher kits have a separate firing box to provide the current required for successful system activation. Never connect any component of your Willans fire extinguisher to the existing wiring in the vehicle as this system is designed to be completely isolated. Ensure all solder connections are properly insulated. The recommended method for this is with heat shrink.

Wiring and Testing

Wire the system as follows:

On the 4-core cable:

- Connect the brown wire to 1 terminal of the internal switch
- Connect the blue wire to the blue wire on the 3-core cable
- Connect the white wire to the anode of the dashboard LED (long leg)
- Connect the black wire to the cathode of the dashboard LED (short leg)



The dashboard LED is optional. If you are not using it, the black and white wires should be individually cut off and insulated using heat shrink to avoid unintentional contact or earthing.

On the 3-core cable:

- Connect the brown wire to the other terminal of the internal switch
- Connect the blue wire to the blue wire on the 4-core cable
- Leave the black wire disconnected and trim to length

If you have a saloon system with an external firing button, this should be wired in parallel with the internal firing button. It is recommended that the screw terminals on the internal firing button are secured with thread-lock to avoid them vibrating loose..

This wiring is also shown in the wiring diagram provided for your system on page 10. Once this is completed, a system test is required. This will ensure the system will activate properly.



On the firing box is a 3-way toggle switch. **DO NOT PUSH THIS SWITCH INTO THE DOWNWARD ‘ARMED’ POSITION UNTIL A FULL TEST HAS BEEN CARRIED OUT AND IS SUCCESSFUL.** Failure to do this may result in your system firing accidentally.

By pushing the 3-way switch upwards towards the ‘battery check’ LED and momentarily holding it in place, the microprocessor in the firing box will test the batteries for the current they can provide. If the ‘battery check’ LED lights up, the batteries will be able to fire the system successfully if required. If this LED does not light up, replace the 3 AAA batteries immediately. We recommend Duracell alkaline batteries.

With the switch in the middle ‘system check’ position, a circuit resistance check can be carried out. Push the internal firing button and LED on the firing box should light. Failure of the LED to light suggests that the circuit is broken or there is too much resistance in the circuit. Check the circuit for any loose connections or signs of corrosion.



If the LED lights up before the switch is pressed there is a short circuit and the system will be permanently live. **DO NOT MOVE THE SWITCH TO THE ‘SYSTEM ARMED’ POSITION AT THIS POINT. DOING SO WILL DISCHARGE THE SYSTEM.**

Once the system has passed the checks it is ready to use. To arm the system, move the toggle switch to the ‘system armed’ position. The ‘service due’ LED will flash a number of times and then the ‘armed’ LED and the dashboard LED will flash continuously until the system is deactivated.



For more information on the ‘service due’ LED please refer to the maintenance section of this manual.

Mechanical System Components

Mechanical systems are operated using pull cables. Each system is supplied with two pull cables. 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 or harnesses. The external pull cable is normally mounted on the front scuttle of a saloon car (below windscreen), 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 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. The end of each cable should be passed through the levers of the extinguisher valve 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. **DO NOT CHECK THE OPERATION OF THE CABLE WHILE IT IS ATTACHED TO THE LEVERS.** Doing so will cause the system to discharge. Always remove the pull cables from the levers, check the operation and lubricate if necessary, and then reconnect them to the levers.

Nozzles

The nozzles are designed to produce an atomised foam spray with a controlled particle size which has excellent fire knock-down and fire-out capability. It covers the target area with a film-forming foam substance which has a cooling effect and controls re-ignition. The nozzles produce a 80° full cone spray pattern, with an effective discharge range of 1 metre. This should be borne in mind when mounting the nozzles.



Only use the correct, genuine Willans nozzles as the system is approved for use only with these nozzles.

For saloons and closed vehicles, the two cockpit nozzles should be mounted under the dashboard, and pointed such that the spray is aimed across and down into the footwells, as shown in figure 1.

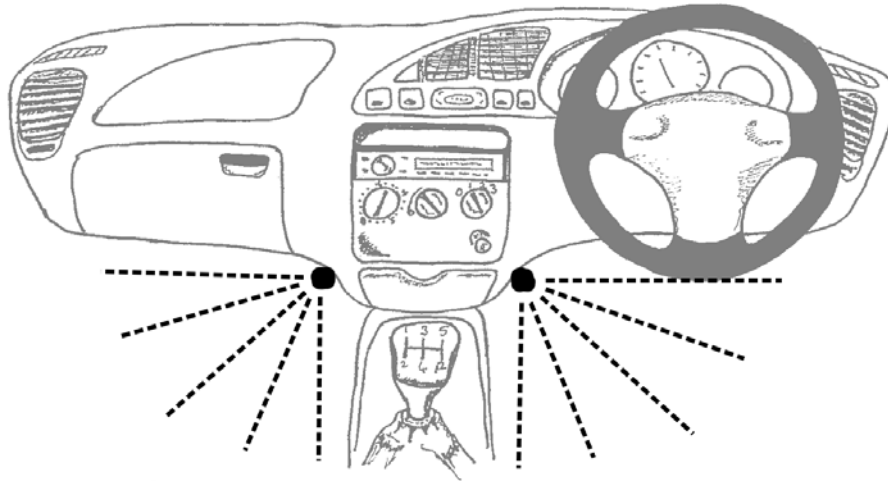


Figure 1: Location of cockpit nozzles for closed cars

For single seaters and open vehicles, the single cockpit nozzle should be mounted such that it is aimed at the driver's midriff, in the normally seated position. It is important to ensure that this spray is not aimed directly at the driver's face.

For all systems 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) with no obstructions in the line of sight to likely high risk areas, such as the fuel and oil systems.

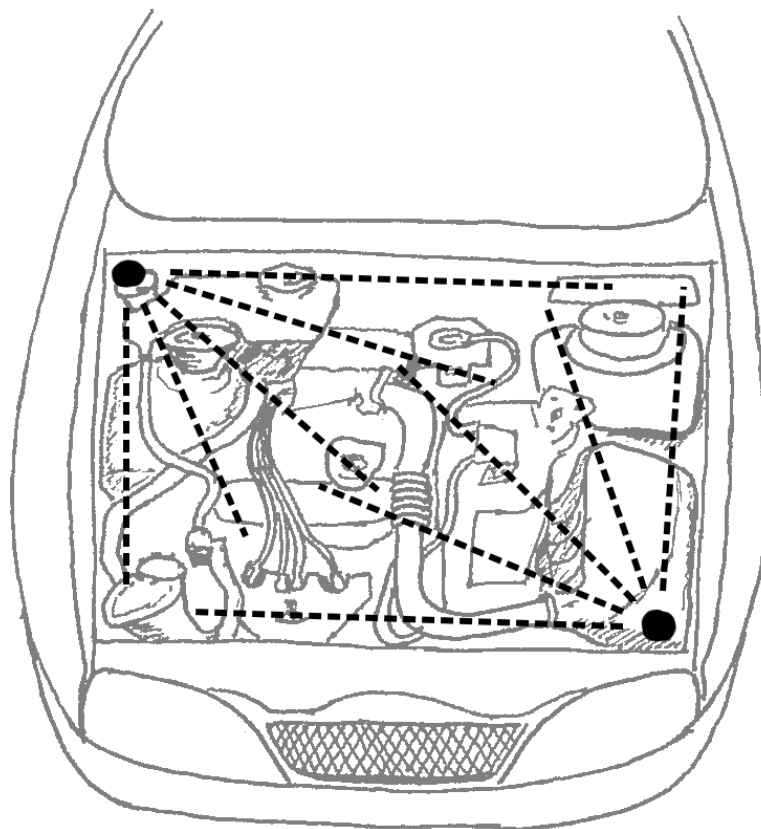


Figure 2: Location of engine bay nozzles



Willans nozzles are designed so that they can be mounted through a bulkhead or to a specially made bracket using the supplied nylon nut. Nozzles must be mechanically secured and not simply supported by their own pipework.

Tubing

Each extinguisher kit is supplied with a specified amount of Willans FXT™ plastic coated aluminium tube. The tubing can be cut to length using a suitable pipe cutter. The ends should be de-burred on the inside using a de-burring tool or drill bit to prevent any burrs restricting the flow. Care must be taken to route tubing away from heat sources (e.g. exhaust manifolds) and to ensure that the tubing is not kinked at the corners.



The system has been designed and homologated to function with this provided tubing. Under no circumstances should an alternative type of tubing be used.

Tube Connections

To aid installation, push-fittings are used on all components to which tubing is required to attach. To install the tube into these fittings, cut the tube in the required location at 90° to the length of the tube, ensuring that the tube retains its circular cross-section. Push the tubing into the push-fitting until a click is heard, at which point you should then be unable to pull the tubing back out of the fitting.



If removal is required, push the tube into the fitting while also pushing the collar on the fitting in the same direction. This will release the grip on the tubing and it can then be pulled from the fitting. It is advisable to check the length of tubing is correct before connecting it to the nozzle as the nozzles tend to fasten more securely.

Maintenance

To ensure that you get the best possible performance from your Willans Extinguisher system, the following checks and maintenance procedures should be carried out each time the vehicle is used.

- Check the cylinder for any damage
- Ensure the pressure gauge is still within the green area on the gauge
- Check the pipework for damage or loose fittings
- Ensure the nozzles are free from debris or obstructions
- If applicable, check the integrity of the electrical circuit using the method described on page 4

Your Willans Extinguisher system should be serviced every 2 years. The service date is provided on the cylinder label for the first service, and a service label will be affixed to the

cylinder for each subsequent service. If you have chosen an electrical system, you may check how many months of service life remain from the control box. By pushing the switch down into the 'armed' position the service indicator will be activated. This will flash 6 times for 6 months or more until a service is due. For a length of time less than 6 months, it will flash once for each month remaining. When the service is due it will flash continuously.



For scrutineering purposes the expiry date of the system is governed by the date indicated on the label on the bottle or a subsequent service label on the bottle.



Ensuring the system is serviced at the correct interval is your responsibility. When you need to service your system, or refill it once it has been discharged, this task must be carried out only by Willans or a Willans official service centre. Your Willans Extinguisher system will fail scrutineering if:

- The extinguisher is not within service date
- The pressure gauge is not inside the green sector
- The tamper-evident labels are not intact
- Parts other than genuine Willans Components have been used
- The contents are below the specified weight
- The labels on the cylinder cannot be read clearly
- The system is in poor overall condition



When returning your system for service remove the tubing from the T-connector push fittings on the cylinder. **DO NOT UNSCREW THE T-CONNECTOR FROM THE CYLINDER.** Doing this will destroy the seal on the thread and a new T-connector will be required.

If you are returning your system for a refill after it has been used, you must also replace the nozzles and possibly the tubing and/or push-fit connectors depending on condition. It is recommended to replace these components as a matter of course. Please contact either Willans or a Willans distributor for replacement parts.



When returning an electrical system for service, also include the firing box so that the 'service due' timer can be reset.

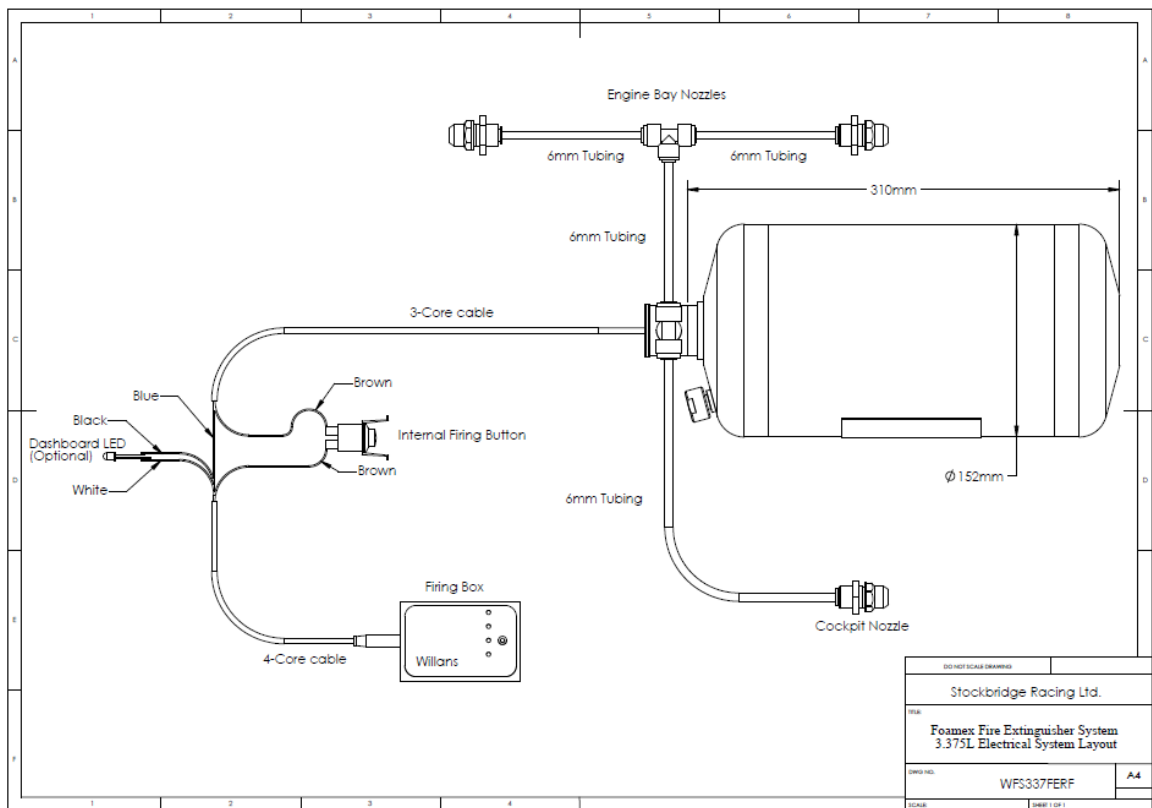
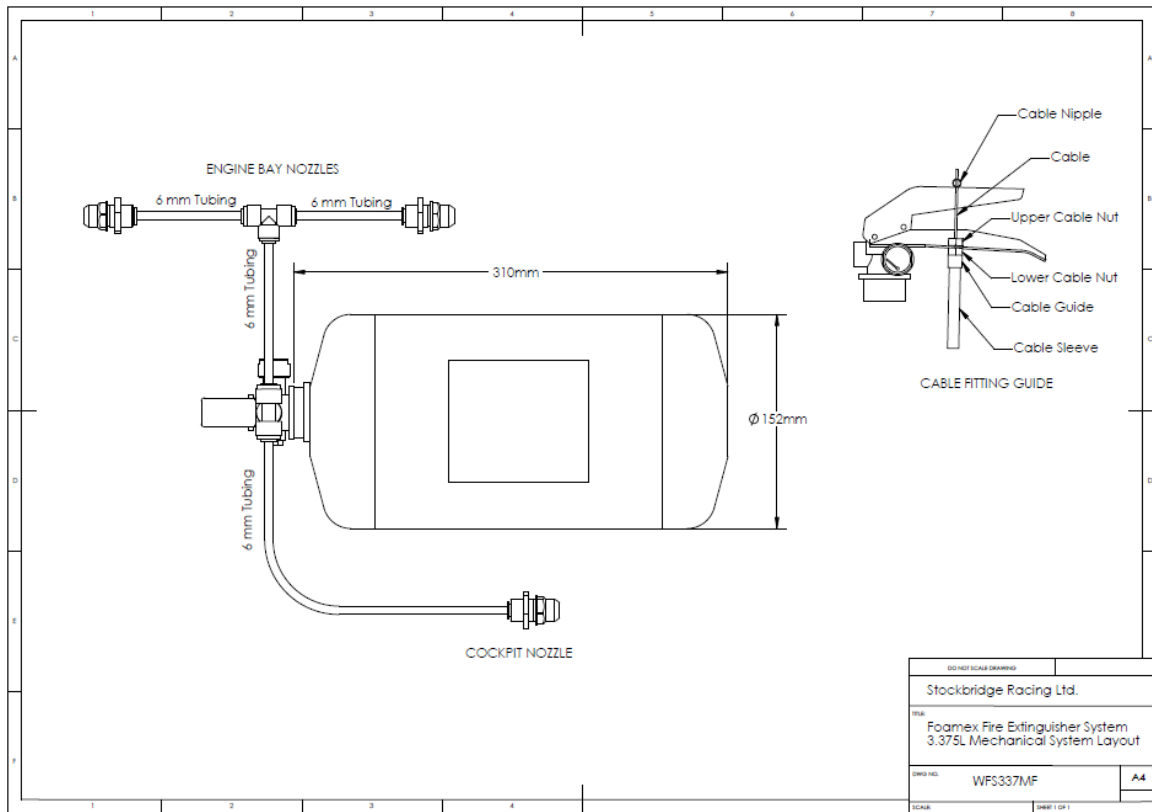
Technical Specification of AFFF foam

Contents	Foam solution with de-ionised water and antifreeze
Appearance	Pale yellow liquid
Density	1.02g/ml ± 0.05
pH level	7.0-8.5
Freezing point	-10°C
Flash point	> 100°C
Maximum storage temp.	49°C
Ozone depletion potential	None

Kit Contents

<p><u>3.375L Mechanical</u></p> <p>Fire extinguisher cylinder c/w cradle, straps and firing head</p> <p>WFCF005 1 x 2m pull cable WFCF006 1 x 4m pull cable WFAN001 3 x Foamex nozzle WFCT001 1 x 6mm equal T-connector WFCT005 4m x 6mm Willans FXT tubing WFCT006 5 x Tubing clips WFCM007 1 x Decal pack</p>	<p><u>3.375L Electrical</u></p> <p>Fire extinguisher cylinder c/w cradle, straps and firing head</p> <p>WFCF009 1 x Electrical firing box WFCF001 1 x Internal firing button WFCF003 1 x 4-pin wiring cable WFCF004 1 x 3-pin wiring cable WFCF010 1 x Dashboard LED WFCF011 1 x LED bezel WFAN001 3 x Foamex nozzle WFCT001 1 x 6mm equal T-connector WFCT005 4m x 6mm Willans FXT tubing WFCT006 5 x Tubing clips WFCM007 1 x Decal pack</p>
<p><u>4L Mechanical</u></p> <p>Fire extinguisher cylinder c/w cradle, straps and firing head</p> <p>WFCF005 1 x 2m pull cable WFCF006 1 x 4m pull cable WFAN001 4 x Foamex nozzle WFCT002 2 x 8mm into 6mm unequal T-connector WFCT003 1 x 8mm bulkhead connector WFCT004 2m x 8mm Willans FXT tubing WFCT005 4m x 6mm Willans FXT tubing WFCT006 5 x Tubing clips 6mm WFCT008 2 x Tubing clips 8mm WFCM007 1 x Decal pack</p>	<p><u>4L Electrical</u></p> <p>Fire extinguisher cylinder c/w cradle, straps and firing head</p> <p>WFCF009 1 x Electrical firing box WFCF001 1 x Internal firing button WFCF002 1 x External firing button WFCF003 1 x 4-pin wiring cable WFCF004 1 x 3-pin wiring cable WFCF010 1 x Dashboard LED WFCF011 1 x LED bezel WFAN001 4 x Foamex nozzle WFCT002 2 x 8mm into 6mm unequal T-connector WFCT003 1 x 8mm bulkhead connector WFCT004 2m x 8mm Willans FXT tubing WFCT005 4m x 6mm Willans FXT tubing WFCT006 5 x Tubing clips 6mm WFCT008 2 x Tubing clips 8mm WFCM007 1 x Decal Pack</p>

Wiring and Layout Diagrams



Willans® Foamex™ Fire Extinguisher System Instruction Manual

