



# Certificate of Conformity

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## Product designation

**Wormald, heavy vehicle, pre-engineered fire suppression system**  
(Refer to the Schedule/enclosures for further specified details)

## Agent/distributor

Tyco Fire & Security  
Unit 1, 2-8 South Street, RYDALMERE, NSW, AUSTRALIA, 2116

## Registrant

Tyco Fire & Security  
Unit 1, 2-8 South Street, RYDALMERE, NSW, AUSTRALIA, 2116

### Producer

Tyco Fire & Security  
Unit 1, 2-8 South Street, RYDALMERE, NSW, AUSTRALIA, 2116

## Conformance criteria and evaluation

The Wormald, heavy vehicle, pre-engineered fire suppression system has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 5062-2006, 'Fire protection for mobile and transportable equipment'.

## Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

Specified limitations/conditions, determined from the evaluation for conformity, include the following.

- i. Design, installation, operation and maintenance, in accordance with the Wormald system manual relevant to the requirements of the particular installation ("Pressure to Operate" or "Loss of Pressure").
- ii. Applications where the system would be expected to perform effectively in environmental temperatures below 2°C or more than 60°C
- iii. AFFF concentrate shall be Ansulite 6% ICAO-B AFFF Foam Concentrate (Ansul Part No. 430042) is used in the system.
- iv. The pre-mixed agent solution within each storage cylinder shall contain, by volume, not less than 6 parts per hundred or more than 11 parts per hundred undiluted Ansulite 6% ICAO-B AFFF Foam Concentrate, the balance being water which conforms to the purity limits specified by the manufacturer of the AFFF concentrate.

(Limitations/conditions of conformance continue)

Issued by

David Whittaker  
Executive Officer – ActivFire Scheme



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- v. The system shall be given at least one discharge test at completion of installation and the resulting measured discharge time shall be within the range of 54 seconds to 66 seconds, with all nozzles producing their rated conical spray pattern throughout the measured discharge period.
- vi. The agent fill quantity and propellant gas pressure within the storage cylinders, and the number of installed nozzles, shall conform to the limits specified below in "Technical Specifications".
- vii. The nozzles shall be carefully and appropriately located, mounted, and aimed, as specified in the above Manual.
- viii. Except when discharging, the discharge aperture of each spray nozzle shall be kept sealed with Dow Corning No. 4 Silicone Compound, and shall also be protected from entry of insects and debris by use of the listed nozzle cap (Wormald part number FOSSCAP2.5).

## Producer's description

### Systems summary:

System type	Nominal water capacity	Height (including valve)	Diameter	Maximum number of nozzles	Maximum allowable fill of foam solution
"Pressure to Operate"	106 litres	1210 mm	360 mm	16	80 litres
	65 litres	910 mm	360 mm	10	47 litres
	45 litres	760 mm	318 mm	7	33 litres
	25 litres	910 mm	216 mm	4	19 litres
"Loss of Pressure"	106 litres	1210 mm	360 mm	16	80 litres
	65 litres	910 mm	360 mm	10	47 litres
	45 litres	760 mm	318 mm	7	33 litres
	25 litres	910 mm	216 mm	4	19 litres

**Container material:** Stainless steel ASTM A240 grade 304  
**Container colour:** Blue (Shade B21 AS2700)  
**Pressurization:** Industrial dry nitrogen, 1620 kPa @ 20°C  
**Safety burst-disc rating:** 3100 kPa to 3500 kPa

### Nozzle positioning limitations:

#### Maximum distance between nozzle outlet and aiming point on risk:

Nozzles aimed horizontally                      1200 mm  
 Nozzles aimed vertically downward            1500 mm

#### Minimum vertical distance between nozzle and aiming point on risk:

Range of nozzle orientations as above        200 mm

### Hose and tube requirements:

Hydraulic hose shall comply with the requirements of SAE Specification 100R5, and stainless steel tube with DIN Standards 17440, 2391, and 2413.

### Components that have been evaluated and form part of the listed system include the following:

Description	Part ident.
106 cylinder shielded bracket	FO106BKT
106 litre cylinder, bare	FO106LCYL
106 litre foam system valve and cylinder assembly, 'C' type valve	106LCYLASSC
106 litre foam system valve and cylinder assembly, 'P' type valve	106LCYLASSP
65 cylinder shielded bracket	FO65BKT
65 litre cylinder, bare	FO65LCYL
65 litre foam system valve and cylinder assembly, 'C' type valve	65LCYLASSC
65 litre foam system valve and cylinder assembly, 'P' type valve	65LCYLASSP
45 cylinder shielded bracket	FO45BKT
45 cylinder shielded bracket - high profile	FO45HPBKT
45 hp box (high profile cylinder)	FO45HPBOX
45 litre cylinder, bare	FO45LCYL
45 litre cylinder, bare (high profile)	FO45LCYL HP
45 litre foam system valve and cylinder assembly, 'C' type valve	45LCYLASSC
45 litre foam system valve and cylinder assembly, 'P' type valve	45LCYLASSP

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Description	Part ident.
25 cylinder shielded bracket	FO25BKT
25 litre cylinder, bare	FO25LCYL
25 litre foam system valve and cylinder assembly, 'C' type valve	25LCYLASSC
25 litre foam system valve and cylinder assembly, 'P' type valve	25LCYLASSP
Actuator box (part of 'ACTASSP')	FOACTBOX
Actuator bracket (part of actuator assemblies)	FOACTBRKT
Actuator cartridge	FOCART5L
Actuator knob	FOKNOB
Actuator label	FOACTLABEL
Actuator label (part of actuator assemblies)	FOACTLABEL
Base plate for 45 l, 65 l and 106 l	FOBASEPL
Bursting disc assembly	BURDISASS
Cabin & remote manual actuator assembly, 'P' type system	ACTASSP
Cabin manual actuator assembly, 'C' type system	ACTASSC
Check valve (part of actuator assemblies + control valve)	FOCHKVAL
Control valve - type 'C' (brass)	FOAMCHEAD
Control valve - type 'C' (stainless steel)	FOSSCHEAD
Control valve - type 'P' (brass)	FOAMPHEAD
Control valve - type 'P' (stainless steel)	FOSSPHEAD
Cylinder valve 'O'-ring	FOVALORING
Detection tube / hydraulic hose tee	FODETHYDTE
Detection tube tee	FODETEE
Detection tube union	FODETUNION
Electric piston actuator	FOPISTACT
Engine shutdown assembly	FOENJNASS
Fire control panel, hard wired, 'P' type system w/o shutdown	FOFIREPAN
Fire control panel, self contained, 'P' type system	FOSCFIREPA
Fire Detection Probe, 145°C	FO145PROBE
Fire Detection Probe, 160°C	FO160PROBE
Fire detection tube, per metre	FODETUBE
Fire wire, per metre	FOFIREWIRE
Foam concentrate, Ansulite 6% ICAO-B AFFF, 20 litre plastic drum.	Ansul P/N 430042
Manifold block	FOMANIFOLD
Manual / electric actuator assembly, 'P' type system (piston operated)	AUTOACTASSP-E
Protract Actuation Device (PAD) Shipping Assembly	435479
PAD Actuator	
Protract Actuation Device	436026
Cable / connector assembly	436114
Manual actuator valve, brass	FOACTVALVE
Manual actuator valve, stainless steel	FOSSACTVAL
Manual actuator valve, brass, 'P' type system	FOMANVALVE
Manual actuator valve, stainless steel, 'P' type system	FOSSMANVAL
manual automatic actuator valve (electric piston type)	FOAUTOVAL
Mimic panel	FOMIMIC
Nozzle bracket	FONOZBKT
Nozzle, brass	FOBNM16NOZ
Nozzle, stainless steel	FOSS16NOZ
Nozzle cap, stainless steel	FOSSCAP2.5
Wormald, system manual, "Pressure to Operate", Heavy Vehicle Fire Suppression System	Revision E, Feb 2008
Wormald, system manual, "Loss of Pressure", Heavy Vehicle Fire Suppression System.	Revision E, Feb 2008
Liquid filled pressure gauge	FOLIQGAUGE
Pressure switch, engine shut-down	FOPRESSW
Refill plug for 25 litre cylinders	FO20PLUG
Refill plug for 45, 65 and 106 litre cylinders	FO50PLUG
Remote manual actuator assembly, 'C' type system	ACTASSR
Schrader valve	FOSCHVALVE
Syphon tube, swivel, 106 l	FODNTU106
Syphon tube, swivel, 65 l	FODNTU65
Syphon tube, swivel, 45 l	FODNTU45

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Description	Part ident.
Siphon tube, swivel, 45 l High Profile	FODNTU45HP
Siphon tube, swivel, 25 l	FODNTU65

The Wormald, heavy vehicle, pre-engineered fire suppression system is a central-storage aqueous foam spray type fixed fire suppression system for "off road" vehicles. Typical applications include surface and underground mining equipment, waste disposal equipment, and agricultural machinery. Comprehensive testing has demonstrated that the system is effective on Class 'A' and Class 'B' fires and, to a limited extent, on Class 'E' fires. This system consists of three major components:

- (a) an agent storage cylinder assembly containing a 6% solution of Aqueous Film Forming Foam (AFFF) concentrate in clean (potable) water, which occupies approximately 75% of the cylinder volume and is pressurised with dry nitrogen to 1620 kPa at 20°C;
- (b) a detection and actuation system to trigger the release of the installation; and
- (c) a delivery network to carry the foam solution from the pressurised cylinder to the nozzles and onto the fire.

### Agent distribution system

The extinguishing agent, AFFF solution, is delivered from the agent storage cylinder to the fire-prone surfaces / areas via a fixed pipe network consisting of hydraulic system hose assemblies, stainless steel tubing, and non-aspirating spray nozzles. The nozzles are located and aimed by the installer, in accordance with the system's listed installation instructions, such that the spray will directly impinge on, and adequately cover, the selected fire hazards of the protected risk. The nozzles produce a 'conical' spray pattern which has a fixed included angle.

### Detection and actuation system

The detection and actuation system is either a "Loss of Pressure" type or a "Pressure to Operate" type. The fire-detection function of the "Loss of Pressure" type system utilises pneumatic (thermoplastic) tubing pressurised to the cylinder pressure with dry nitrogen. The thermoplastic tubing ruptures promptly during a fire, allowing the cylinder valve to open (Type 'C' System). The "Pressure to Operate" system (Type 'P' System) utilises electric fire detectors which are either Fire Wire or Probe type. On activation, these detectors trigger a fire panel which, in turn, triggers a high pressure nitrogen cartridge type actuator assembly. The high pressure nitrogen flows, via small-diameter actuation hose, to the container valve, causing release of foam-solution agent to the spray system. Both types of actuation system have a manual actuator within the cabin and one or more "remote" manual actuators external to the cabin (mounted on the protected equipment and usually accessible from ground level). Both types of actuation system also include an automatic engine shut-down (fuel cut-off) feature with manual override button. The Type 'C' pneumatic detection and actuation system is pressurised via "live connection" to the nitrogen within the agent container, while the nitrogen to operate the Type 'P' system is derived from proprietary (Ansul) high pressure "gas cartridges" housed within the actuator assemblies, which are usually remote from the agent container. The hoses of the 'P' type actuation system are not pressurised until an actuator assembly is triggered either automatically or manually, causing piercing of the seal disc of the gas cartridge and release of the gas into the actuation hoses. The control valve of each agent container is fitted with a pressure indicator to facilitate periodical visual checking for adequate pressure. Due to the operating principle of the Type 'C' agent release valve, all Type 'C' agent container assemblies must only be installed vertically. However, by fitting an appropriate siphon tube as specified below, Type 'P' agent container assemblies can be supplied for either vertical or horizontal mounting.