

AMBUSH System

Description

The AMBUSH System is an air-aspirating foam device designed for effective system based full-surface and rim-seal fire suppression for external floating roof storage tanks. This device is another cutting edge innovation from WILLIAMS FIRE & HAZARD CONTROL.

Features

As a fixed system component, the AMBUSH System provides the following features:

- Quicker response time
- Less man power required than a portable large-volume delivery approach
- Less flow-rate required due to lower recommended application densities
- Less specialized training required
- Few personnel exposed to a hazardous situation
- Manufactured using type 316 stainless steel
- Available in six models
- Model 3305 contains a single air aspirating device whereby expanded foam solution discharges through left, right, and against the wall discharge points
- All other AMBUSH models, 4421, 5541, 6661, and 8811, include a separately piped inlet with an additional air-aspirating device. This device discharges expanded foam solution towards the center of the tank
- Water and foam solution inlets are flat faced and drilled to ANSI 150 lb standard
- Inlets are covered with a stainless steel protection screen
- Finished with a durable red epoxy paint

Design

The AMBUSH System is designed for installation above the roof joint and mounting above the highest level of the floating roof. Foam solution is piped to the AMBUSH System from outside the hazard area.

For tanks less than 160 ft (48.8 m) in diameter, AMBUSH 3305 nozzles can be fitted to provide full surface and rim seal protection with a single inlet wand. No top nozzle is required as the foam can run 80 ft from the shell of the nozzle to the center which reduces water/foam solution flow rate by facilitating a purely Type 2 application. A single pipe connects to the bottom of each nozzle.

For tanks greater than 160 ft (48.8 m) in diameter, AMBUSH nozzles 4421 and higher are used to provide full surface and rim seal protection.



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These nozzles have two inlets (wand and top nozzle) that can be combined to a single feed, or piped separately to the base of the tank where the top nozzle can be closed in the event of a seal-only fire. This reduces the overall flow rate and the chance of sinking a floating roof which may be still in place. The top nozzle is used to shoot foam to the center of the tank which is difficult to reach by a normal foam run from the shell area.

Application

Mounted to the rim of a tank, the AMBUSH System simultaneously delivers the following types of fire protection:

- Type 3 application projects towards the center of the tank for full-surface fire protection.
- Type 2 application projects lateral streams along the tank wall for rim-seal fire protection.

Type 3 application

The projection of water or foam solution onto the surface of a tank from a ground position is referred to as a Type 3 application. Full-surface fire protection may be effectively delivered by experienced response teams deploying significant water and foam resources by large volume, manned, and portable fire monitors.

The monitors are operated at a distance from a burning tank and offer over-the-top trajectory and safe attack distances. The water or foam solution is delivered from outside the tank in a Type 3 application so fallout must be considered. Fallout is any of the water or foam solution that does not land inside the tank because of wind or general stream erosion from the ground assault.

The benefit of a fixed system Type 3 application is a potential increase in foam application density on the storage tank surface area. The AMBUSH System is on an elevated position on the tank rim where a Type 3 application results in minimized wind erosion and a more forceful seal area application. This reduces application times, and less water and foam concentrate is used when compared to a typical Type 3 application.

Type 2 application

A traditional fixed foam system, such as a foam chamber or foam pourer, is referred to as a Type 2 application. For rim seal protection, the device delivers a cascading application of water or foam solution from unmanned systems affixed to the tank itself.

This method of delivery usually deploys lower application volumes targeting the rim seal area. However, it does not deliver adequate water or foam solution to suppress a full-surface fire.

The AMBUSH System is available in several different sizes, each functioning similarly, to protect different tank sizes. The stream is broken into four components as follows:

- The left and right discharge streams are identical and deliver foam left and right of the unit against the tank wall
- The upper stream discharges foam at a slight angle towards the center of the tank
- The fourth stream discharges foam against the tank's shell and protects the area just below the unit with a small stream

The multiple streams project towards the center of the tank converge, suppress the fire in the center of the tank, and build back towards the tank shell. Simultaneously, the left and right streams project foam around the circumference of the tank and suppress any fire near the tank shell.

When the tank shell fire is suppressed, the coverage begins to grow towards the center of the tank. This coverage meets the foam blanket being established by the upper stream, leading to a full foam blanket on the entire tank.

Ordering Information

Multiple discharge devices are required for each tank size. To determine the required number of devices for each tank size, refer to the following information:

RECOMMENDED MODEL AND QUANTITY OF AMBUSH SYSTEM DISCHARGE DEVICES

AMBUSH 8881																9	10	11	12	13	14	15																										
AMBUSH 6681																6	6	10																														
AMBUSH 6661																6	7	8	9																													
AMBUSH 5541																5	6	8	9																													
AMBUSH 4421																3	4	5																														
AMBUSH 3305	1	2	3	4																																												
TANK DIAMETER	ft	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500
	m	12.2	15.2	18.3	21.3	24.4	27.4	30.5	33.5	36.6	39.6	42.7	45.7	48.8	51.8	54.9	57.9	61.0	64.0	67.0	70.1	73.1	76.2	79.2	82.3	85.3	88.4	91.4	94.5	97.5	100.6	103.6	106.7	109.7	112.8	115.8	118.9	121.9	125.0	128.0	131.0	134.1	137.1	140.2	143.3	146.3	149.4	152.4

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- Notes:** 1. A 100 psi (6.9 bar) discharge pressure is assumed for each device.
2. For pressure less than 100 psi (6.9 bar), additional nozzles may be required. Consult WFHC representative.

Use the following information when ordering the AMBUSH System:

Ordering Information					
Part Number	Description	Tank Diameter		Flow Range	
		ft	(m)	gpm	(Lpm)
11731	AMBUSH 3305, 4 in. inlet	≤ 160	(48.8)	411 – 650	(1,556 – 2,461)
20465	AMBUSH 4421, 3 in. and 6 in. inlets	161 – 230	(49.1 – 70.1)	696 – 1,100	(2,635 – 4,164)
20466	AMBUSH 5541, 4 in. and 6 in. inlets	231 – 310	(70.4 – 94.5)	949 – 1,500	(3,592 – 5,678)
11735	AMBUSH 6661, 4 in. and 6 in. inlets	311 – 360	(94.8 – 109.7)	1,138 – 1,900	(4,308 – 7,192)
11736	AMBUSH 6681, 4 in. and 6 in. inlets	361 – 410	(110.0 – 125.0)	1,328 – 2,100	(5,027 – 7,949)
11737	AMBUSH 8811, 4 in. and 8 in. inlets	411 – 500	(125.3 – 152.4)	1,708 – 2,700	(6,465 – 10,221)

Notes: 1. Models 3305 and 5541 have been tested against UL 162 and passed examination.

2. Models 4421 and up have now been standardized as SIDE-BY-SIDE models for improved ease of installation.

Use the following information when ordering accessories for the AMBUSH System:

Accessories	
Part Number	Description
11730	Kit, 10 in. backboard mount assembly for AMBUSH 3305, 10 in. channel with fasteners
11738	Kit, 15 in. backboard mount assembly for AMBUSH 4421, 5541, 6661, and 6681, 15 in. channel with fasteners
11732	Kit, 18 in. backboard mount assembly for AMBUSH 8881, 18 in. channel with fasteners
11739	Kit, inlet for AMBUSH 4421, 6 in. x 6 in. x 3 in., valved Wye with gaskets and fasteners
11740	Kit, inlet for AMBUSH 5541, 6661, and 6681, 6 in. x 6 in. x 4 in., valved wye with gaskets and fasteners
11741	Kit, inlet for AMBUSH 8881, 8 in. x 8 in. x 4 in., valved wye with gaskets and fasteners

Note: The converted values in this document are provided for reference only and do not reflect an actual measurement.

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