Discharge Devices & Nozzles

Foam Generator | Model SME Aspirated Medium Expansion Generator

1 General description

Medium Expansion (MEX) foam generators are designed to expand foam solution into a stable aggregation of bubbles with discharge expansion ratios from 20:1 up to 200:1, which is dependent on the foam concentrate, used and supply pressure. Foam solution enters the generator through a sized orifice inside the inlet tube and is sprayed onto a mesh diffuser screen. The increased velocity through the inlet orifice creates a venturi effect and aspirates air into the spraying foam solution creating a homogeneous finished foam. The produced foam is capable of flowing into hard to reach areas and limits the release of flammable vapors due to its thick foam blanket. The expanded foam properties makes it suitable for indoor and outdoor use.

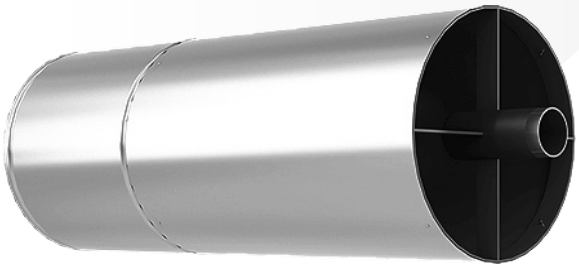

Fig 1.1 Model SME Aspirated Medium Expansion Generator

Image for illustration purposes only

MEX generators are usually part of a fixed deluge or flow control system and shall be used in combination with a suitable foam proportioning system. They are suitable for use in total flooding or local application systems. Foam Concentrates developed and tested to work in medium expansion systems should be used. It is important to consider that different foams will have varying expansion performance through a medium expansion generator.

Medium expansion foam systems are commonly used on hazards with ordinary combustibles (Class A) or ignitable liquids (Class B). These hazards are commonly found in process areas, chemical storage, tank farms, loading areas and fuel transfer facilities for example.

This technical data is intended for trained experts. It contains basic information needed to use the product described.

Technical data can be found on the KCA website at http://www.kcantincendi.com. The website may include a more recent edition of this technical data sheet.

For further information, please contact KCA or refer to the technical documentation. The contents of this publication are subject to modifications without notice.

2 Listings and approvals

None

3 Technical data

3.1 Construction features

- 6 standard size options for optimum design flexibility
- No moving parts and no external power requirements
- Vertical, horizontal or diagonal installation
- Stainless steel body
- Grooved or threaded connection

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3.2 Standard materials

SME - Medium Expansion Generator	
Generator Inlet Pipe	Stainless steel AISI-304
Main Body	Stainless steel AISI-304
Inlet Orifice	Stainless steel AISI-304
Foam Diffuser Screen	Stainless steel AISI-304
Handle (were fitted)	Plastic

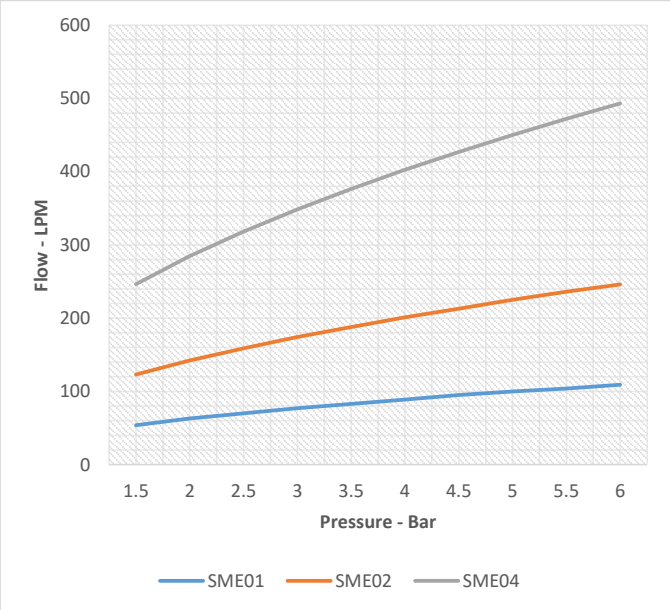
Table 3.2.1 - Standard materials

3.3 Standard design specifications

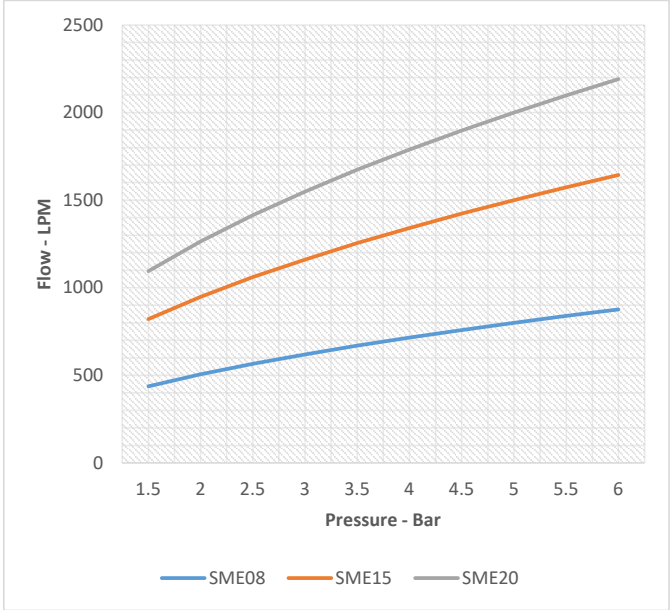
Model	Inlet size	Recommended working pressure				Flow range				Standard metric K Factor [3]	Net weight	
		Minimum [1,2]		Maximum		Minimum		Maximum				
		psi	bar	psi	bar	GPM	LPM	GPM	LPM		lbs	kg
SME01	1.5"	22	1.5	87	6	14.3	54	28.8	109	44.7	8	3.5
SME02	1.5"	22	1.5	87	6	32.5	123	65	246	100.6	13	6
SME04	2"	22	1.5	87	6	65.1	246	130.3	493	201.2	20	9
SME08	2.5"	22	1.5	87	6	115.7	438	231.4	876	357.8	29	13
SME15	2.5"	22	1.5	87	6	216.9	821	434.1	1,643	670.8	29	13
SME20	3"	22	1.5	87	6	290.3	1,095	578.6	2,190	894.4	31	14

Notes
[1] Optimum working pressure between 2.5 bar and 5 bar.
[2] Lower working pressures are generally not suitable for total flooding systems, which should have at least 3 bar at the inlet.
[3] Different K Factors are available on request to achieve different flow rates. Must be requested with order.
GPM = Gallons per minute, LPM = Litres per minute

Table 3.3.1 - Standard design specifications



Graph 3.3.2 – Standard flow rates (LPM)



Graph 3.3.3 – Standard flow rates (LPM)

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3.4 Ordering information

1. Select the required generator model based on project requirements and performance data in ***Section 3.3*** and ***7***.
2. Select the inlet connection
3. Select the fixed or portable version

Model	Part number	Inlet connection	Application	Finish (body)
SME01	SME-1	1.5" Male BSP	Fixed	Natural
	SME-1/G	1.5" (48.3 mm) Grooved		Natural
SME02	SME-2	1.5" Male BSP		Natural
	SME-2/G	1.5" (48.3 mm) Grooved		Natural
SME04	SME-4	2" Male BSP		Natural
	SME-4/G	2" (60.3 mm) Grooved		Natural
SME08	SME-8	2.5" Male BSP		Natural
	SME-8/G	2.5" (76.1 mm) Grooved		Natural
SME15	SME-15	2.5" Male BSP		Natural
	SME-15/G	2.5" (76.1 mm) Grooved		Natural
SME20	SME-20	3" Male BSP		Natural
	SME-20/G	3" (88.9 mm) Grooved		Natural
SME01	SME-1/H	1.5" Male BSP	Portable	Natural
SME02	SME-2/H	1.5" Male BSP		Natural
SME04	SME-4/H	2" Male BSP		Natural
SME08	SME-8/H	2.5" Male BSP		Natural
SME15	SME-15/H	2.5" Male BSP		Natural
SME20	SME-20/H	3" Male BSP		Natural

Table 3.4.1 – Ordering information

4 Scope of delivery

Ensure that all components are complete and in good condition.

Included

Unit supplied with integrated orifice and foam diffuser.

Not Included

Fixing material, inlet connection fitting / coupling.

5 Availability

Please contact KCA for further information.
The product is available directly from KCA and official distributors only.

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6 Product variants

6.1 Options

- UNI-45, UNI-70, STORZ, BSS, NH threads or UNI, DIN, ANSI, ASA flanges
- Non-standard connections may be available on request.

6.2 Dimensions

Fig. 6.2.1 - Fixed

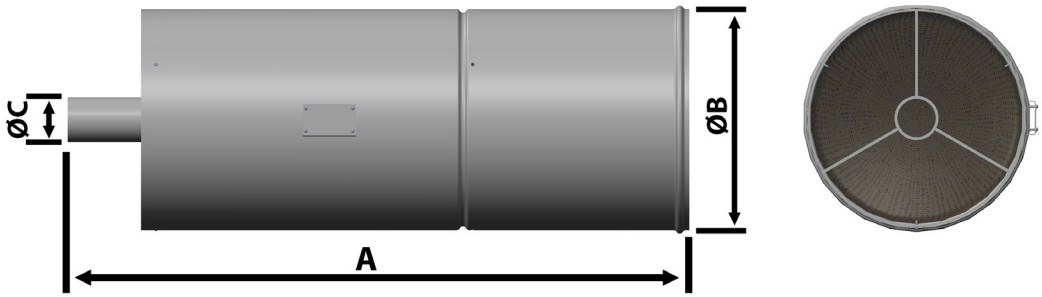
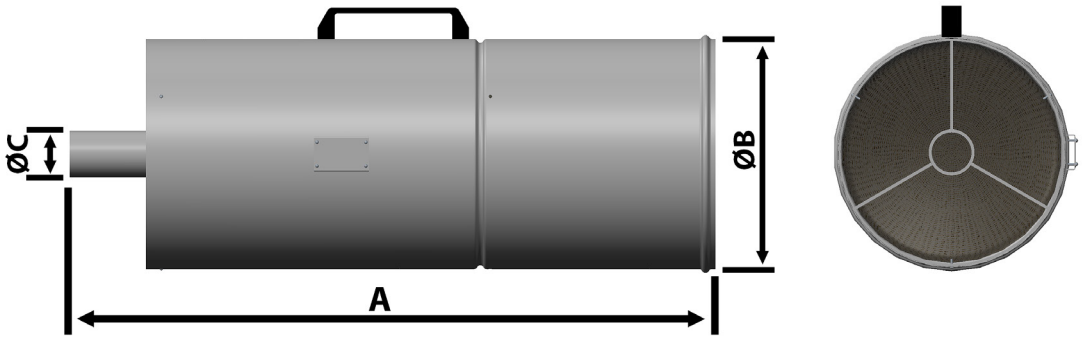


Fig. 6.2.2 – Portable



Model	A		ØB		ØC		Model	A		ØB		ØC	
	Inches	mm	Inches	mm	Inches	mm		Inches	mm	Inches	mm	Inches	mm
SME01	19.7	500	6.3	160	1.5	48	SME08	44.3	1,125	15.7	400	2.5	76
SME02	27.4	696	9.3	235	1.5	48	SME15	44.3	1,125	15.7	400	2.5	76
SME04	33.3	846	11.8	300	2	60	SME20	44.3	1,125	15.7	400	3	89

Table 6.2.3 – Generator dimensions

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7 Performance data

NOTICE

The following data is based on the Medium Expansion Generators referenced in this data page working together with the specific foam concentrates at their tested flow rates and pressures. Actual site conditions may produce different results.

Different foam concentrates will produce different expansions characteristics depending on variables such as the inlet pressure, generator size or water quality for example. Performance is generic or general. The following table is designed to give an overview of the MEX generator performance based on the foams detailed. Data is based on internal testing of actual discharge performance.

Foam	Type	Approvals and Certification [5]					Discharge Pressure [1,2,3,4]		
		Approval	EN1568-1	EN1568-2	EN1568-3	EN1568-4	1.5 bar	3.5 bar	5.5 bar
Fomtec USP (@3%)	SFFF (Fluorine Free)	UL, ICAO	Yes	Yes	Yes	No	20:1	33:1	35:1
Fomtec ARK (@3%)	SFFF (Fluorine Free)	UL, FM	No	No	No	No	35:1	49:1	48:1
Fomtec FP 3% UL	Fluoro Protein	UL	No [6]	No	No [6]	No	21:1	32:1	36:1
Fomtec AFFF 3%S	AFFF	UL, FM	No [6]	No	No [6]	No	31:1	48:1	50:1
Fomtec ARC3X3 S	AR-AFFF	UL, FM	No [6]	No	No [6]	No [6]	36:1	57:1	55:1
Fomtec LS-EXP	Multi-Purpose Hi-Ex	IMO670	No [6]	Yes	No [6]	No	39:1	58:2	53:1

[1] Data based on internal tests with limited extrapolation.
[2] Performance is foam concentrate specific - other foam concentrates will produce different results.
[3] Tests conducted with a mixture of SME01, SME02 and SME04 devices.
[4] Optimum performance is generally between 3 and 5 bar
[5] Approvals and certification refer to the foam concentrate only.
[6] Internal tests meet the requirements of the specific EN1568 part

Table 7.1 - Typical expansion values

The protection scheme philosophy should be considered when selecting the foam concentrate to use. When used in a total flooding system designed to fill a given volume in a given time, it is important that the foam has good expansion and is stable without collapse. Whereas in a local application system based on area/density a lower expanded foam could be more suitable to avoid overwhelming the protected area such as a fuel storage tank farm.

Other considerations relate to the other types of system on site if sharing the same foam supply. If there are a combination of Low Expansion and Medium Expansion Systems then the foam concentrate should be suitable for both types of application. Generators have a throw capability of between 1 metre and 8 metres depending on generator size and inlet pressure. Most of these generator / foam combinations are at the lower end of the medium expansion foam range as applications tend to be external and if the expansion is too high then the discharge and foam blanket could be adversely affected.

8 Installation

If applicable, refer to the requirements of NFPA11

or EN13565-2. In addition, the "Authority Having Jurisdiction" (AHJ) may have additional installation requirements that must be followed.

The generator can be installed vertically or diagonally angled downwards. It can also be installed horizontally. Ideally, the inlet end of the generator should be outside the risk area to avoid any effect from fire on the expansion performance. Whilst the generator weight is supported from the inlet connection, it is advisable to bracket the main body or build a suitable support to prevent stresses on the inlet connection during discharge.

Fig 8.1 - Typical installation (for illustration only)

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9 Operation

Medium Expansion Foam Generators are part of a fixed fire protection system incorporating a water supply, system pipework, foam concentrate, foam storage tank and proportioning / admixing system.

In a fire condition, the detection system will activate and sound the warning alarms. The deluge or flow control system(s) will then be released via a releasing panel working in conjunction with the detection system. Once the deluge or flow control valve is in operation, the incoming water supply is mixed with the foam concentrate using a proportioning / admixing system thereby creating foam solution. Once the system pipework has filled and is up to the required pressure – medium expansion foam discharge will begin.

10 Guarantee

For details of warranty, refer to KCA's current list price schedule or contact KCA directly.

11 Inspection, tests and maintenance

NOTICE *The owner is responsible for maintaining the fire protection system and devices in proper operating condition.*

WARNING *Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection capabilities of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.*

Refer to respective requirements of NFPA11 and/or EN13565-2. In addition, the "Authority Having Jurisdiction" (AHJ) may have additional maintenance, testing and inspection requirements that must be followed.

This device has no specific maintenance activities but an interim inspection shall be made to ensure debris is not blocking any part of the device

12 Disposal

At end of use the product described here should be disposed of via the national recycling system.

13 Accessories and spare parts

This device has no accessories or spare parts

14 Declaration of conformity

If required. Contact KCA for further information.

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