TANK AND CONTAINER PROTECTION

Model CES&CEI
Foam chamber
Carbon Steel / Stainless Steel



PRODUCT DESCRIPTION

The CES & CEI foam chamber model from AG Fire Sprinkler is a foam discharge device with air suction that performs a function of protecting flammable liquid tanks with floating open roof or conical roof. Foam chambers are equipment that combines a mixing chamber and a foam generator with an air inlet.

The foam chamber has a removable plate with an orifice, between the inlet flange and the outlet flange, of the appropriate size to supply the required foam solution at a specific pressure.

The foam is produced by introducing air into the stream of foam solution. The entrance of the foam chamber is designed to create a venturi effect that draws air into the stream of foam solution. The air is introduced into the foam solution through the holes located in the foam chamber covered with a stainless steel screen to avoid nesting birds or insects.

The frangible glass vapor seal is located in the body of the chamber and prevents the gases of the product to be protected from entering into the fire system. This seal will break once the pressure exerted by the foam is in the range of breakage of the glass, allowing the foam to expand itself inside the chamber.

Once the steam seal has been broken, the foam will be deposited on the roof of the tank to be protected, being normally directed by a deflector plate that directs the foam towards the interior face of the foam tank thus reducing the agitation of the fuel and its discharge in a smooth way.

TECHNICAL DATA

Models	CES-050U, CES-065U, CES-080U, CES-100U & CES-150U: Acero al carbono CEI-065U, CEI-065U, CEI-080U, CEI-100U & CEI-150U: Acero inoxidable
Sizes	CES-050U & CEI-050U – Entrada 2 ” DN50 / Salida 3” DN80 CES-065U & CEI-065U – Entrada 2 ½” DN65 / Salida 4” DN100 CES-080U & CEI-080U – Entrada 3” DN80 / Salida 6” DN150 CES-100U & CEI-100U – Entrada 4” DN100 / Salida 8” DN200 CES-150U & CEI-150U – Entrada 6” DN150 / Salida 10” DN250
Working pressure	2,8 to 7 bar (40 to 100 psi)
End connection	Inlet and outlet: Flange ANSI B16.5 Class 150#
Weight (Approx.)	2”DN50 –29.9 Kg 2 ½” DN65 – 36 Kg 3” DN80 – 48 Kg 4” DN100 – 70 Kg 6” DN150 – 115 Kg
Vapor seal rupture pressure	0,75 to 1,8 bar (11 to 26 psi) Running water/water foam solution pressure at inlet of Foam Chamber
Maximum permissible back pressure on vapour seal	0,08 bar (1 psi)
Deflector	Solid or Split Deflector
Finish	Epoxy coating inside and outside the foam chamber - Red RAL 3000

* The Foam chamber CES-150U & CEI-150U are not UL Listed

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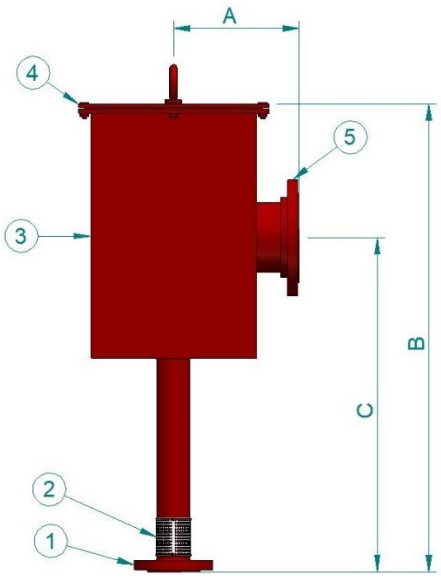
APLICATION

Foam Chamber is used in one of the most common application to protect vertical fixed roof (cone) liquid storage tanks, with or without internal floating roof with the low expansion foam system. The application of foam is on the basis that the risk comprises the total surface area of the fuel. The foam system design guidelines generally used are in accordance with NFPA-11, standard.

Foam chambers are defined by NFPA-11 as Type II discharge outlets for delivering the foam to the surface of a flammable liquid. The Foam Chambers are widely used with the Inline Foam Inductor, Balance Pressure Foam Proportioning system, Bladder Tank Proportioner or Foam Tender.

CROSS SECTIONS

ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATION	
		CES	CEI
2	Inlet flange	Steel	Stainless steel
3	Strainer assembly	Stainless steel	Stainless steel
5	Foam chamber	Steel	Stainless steel
6	Inspection cover	Steel	Stainless steel
8	Outlet flange	Steel	Stainless steel

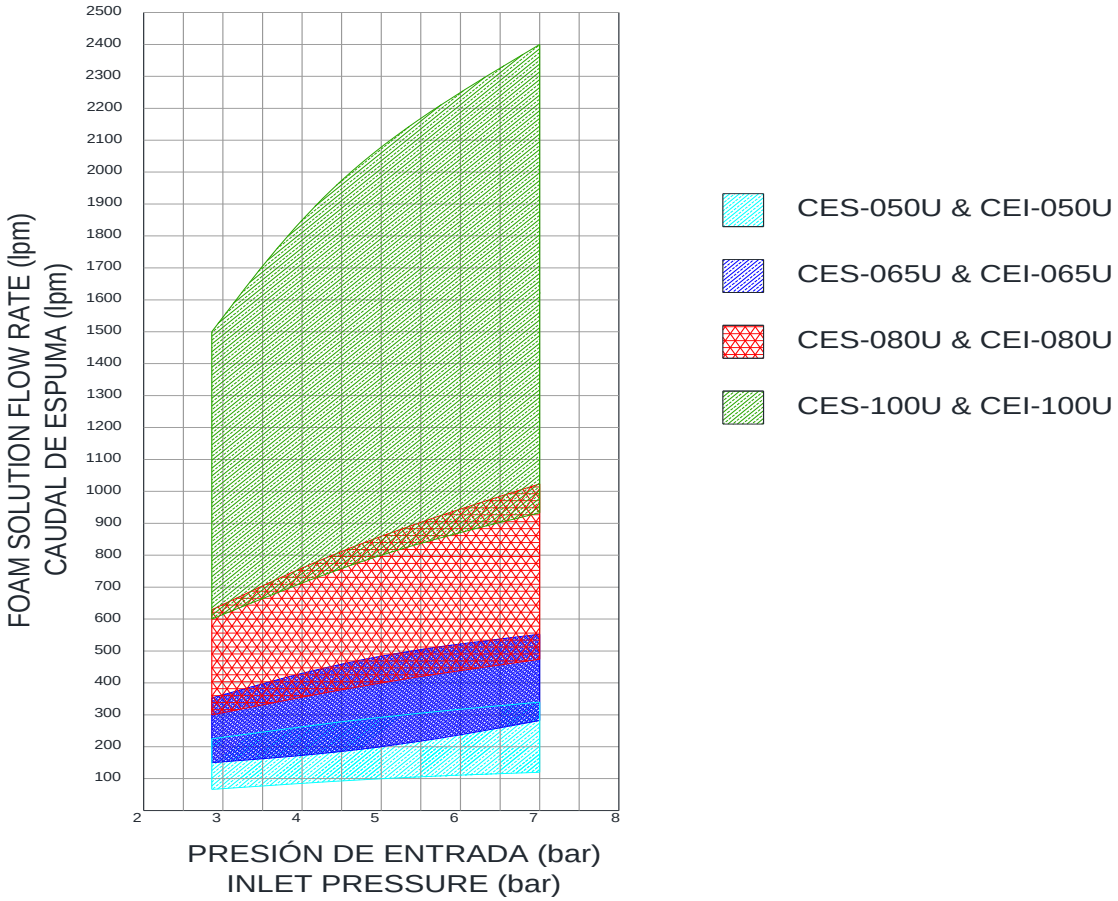


DIMENSIONS

MODEL	INLET FLANGE F1	OUTLET FLANGE F2	A (mm)	B (mm)	C (mm)
CES-050U y CEI-050U	2 ” DN50	3” DN80	180	676	520
CES-065U & CEI-065U	2 ½” DN65	4” DN100	180	760	595
CES-080U & CEI-080U	3” DN80	6” DN150	230	1100	900
CES-100U & CEI-100U	4” DN100	8” DN200	280	1240	1000
CES-150U & CEI-150U	6” DN150	10” DN250	340	1260	1020

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PRESSURE VS FLOW PERFORMANCE CHARACTERISTIC UL with AFFF 3% concentrate



TESTING AND MAINTENANCE

Qualified and trained person must commission the system. After few initial successful tests, an authorized person must be trained to perform inspection and testing of the system. It is recommended to carry out physical inspection of the system regularly. The system must be fully tested at least once in a year or in accordance with applicable NFPA/OISD/TAC standards or in accordance with standards of the organization having local jurisdiction.

Do not turn off the system or any valve to make repair or test the system, without placing a roving Fire Patrol in the area covered by the system. The Patrol should continue until the system is put back in service. Also inform the local security guard and control alarm station, so as to avoid false alarm.

Each system is to be flushed properly. The vapour seal must be replaced if the system has been operated. Normal testing of the chamber can be carried out by removing the cover plate from the top of the chamber. This allows the system to draw a sample of the expanded foam without removing the vapour seal or disconnecting the Foam Chamber from the tank.

The air screen is to be inspected periodically for the obstruction of air inlet holes. If any obstruction is noticed, remove the same and flush if necessary.

It is recommended to have regular maintenance program to inspect the Vapour Seal Chamber discharge area and deflector for possible deposit or obstruction.

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CAUTION

Do not install Foam chambers on pressured storage tanks (Inert gas blanketed tanks) and storage tanks containing product which attack the foam chamber standard construction material.

Maximum permissible back pressure on vapour seal is 0,08 bar (1 psi).

NOTE:

- A provision is to be made for pressure gauge mounting at inlet of foam chamber, which may be plugged after successful commissioning of the system.

MODEL	FOAM MAKER SIZE	K FACTOR (at 2,8 to 7 bar)
		UL AFFF 3% & ARC-AFFf 3x3%
CES & CEI 050U	2" DN50	44.8 to 126.9
CES & CEI 065U	2 ½" DN65	89,6 to 207,8
CES & CEI 080U	3" DN80	179,2 to 385,9
CES & CEI 100U	4" DN100	358,5 to 907,2
CES & CEI 150U	6" DN150	-

ORDERING INFORMATION

INLET/OUTLET	MATERIAL	
	CARBON STEEL	STAINLESS STEEL
2 " DN50 / 3" DN80	CES-050U	CEI-050U
2 ½" DN65 / 4" DN100	CES-065U	CEI-065U
3" DN80 / 6" DN150	CES-080U	CEI-080U
4" DN100 / 8" DN200	CES-100U	CEI-100U
6" DN150 / 10" DN250	CES-150U	

Specify:

Model	
Material	
Size	
Quantity	
Flow and pressure al inlet of each foam chamber	
Inlet, outlet flange specification	
Type of deflector	
Foam concentrate used	

The equipment presented in this data sheet is to be installed in accordance with the latest published Standards of the national fire protection association (NFPA), FM Global, LPCB, VdS or other similar organizations, also with the provisions of governmental codes or ordinances whenever applicable.
This documentation is not contractual. AG Fire Sprinkler reserves the right to any kind of change without notice.

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