

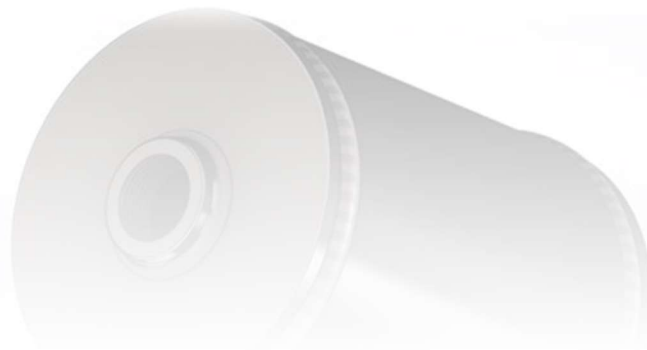
**LAMOT**

VALVE & ARRESTOR

A GROTH CORPORATION BRAND

## Installation, Operation & Maintenance of the In-Line Flame Arrestor

Model L76L-UF



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## INTRODUCTION

This manual is intended to provide recommended instructions for the installation, operation and maintenance of the LAMOT Model L76L-UF in-line flame arrester. Any standard procedures and practices developed for a specific plant or process should supersede this manual. Although this manual cannot cover all possible contingencies, following these guidelines will provide safe, reliable flame arrester service.

The arrester shall be treated as a safety device and must be maintained by a knowledgeable repair technician. Carefully read and understand this manual before installing or servicing this product.

For information not contained in this manual, please contact:

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## INSTALLATION

### APPLICATION LIMITATIONS

LAMOT Model L76L-UF threaded in-line flame arrestors are manufactured in compliance with EN ISO 16852. These L76L-UF arrestors are suitable for in-line low-pressure atmospheric deflagrations, with short burn times, and are designed and tested to operate within the following maximum operating conditions.

For an arrester to be properly installed in a given application, **all** the requirements for one of the two following configuration scenarios must be met:

1. Straight Pipe, Closed End Configuration:							
Connection Size (mm)	Gas Group	End Condition	Allowable Bend(s)*	Maximum Pipe Length from Ignition Source to Flame Arrester	Maximum Operational Pressure	Maximum Burn Time at Atmospheric Pressure	Operational Temperature Range °F (°C)
1" (25 mm)	D (IIA)	Closed End	None	50 pipe diameters	18.9 psia (1.3 bara)	20 minutes	-4 to 140 (-20 to 60)
2" (50 mm)	D (IIA)	Closed End	None	50 pipe diameters	18.9 psia (1.3 bara)	20 minutes	-4 to 140 (-20 to 60)

Model L76L-UF, Straight Pipe, Closed End Configuration, is designed and tested according to EN ISO 16852:2016, except for:

1. The short time burn test was conducted at atmospheric pressure, for a time period extending past 1 minute.

\*No additional bends or restrictions are allowed.

### **WARNING!**

#### **STABILIZED BURNING**

*Unlimited stabilized burning should not be allowed for this model flame arrester. If stabilized burning for a period exceeding 10 minutes is possible, a temperature activated shutdown system and temperature alarm should be installed.*

2. 20 feet with Bend, Open End Configuration:

Connection Size (mm)	Gas Group	End Condition	Allowable Bend(s)*	Maximum Pipe Length from Ignition Source to Flame Arrestor**	Maximum Operational Pressure	Maximum Burn Time at Atmospheric Pressure	Operational Temperature Range °F (°C)
1" (25 mm)	D (IIA)	Open End	One 90 degree	20 ft (ignition source - max of 15 ft - bend - max of 5 ft - arrestor)	15.9 psia (1.1 bara)	20 minutes	-4 to 140 (-20 to 60)
2" (50 mm)	D (IIA)	Open End	One 90 degree	20 ft (ignition source - max of 15 ft - bend - max of 5 ft - arrestor)	15.9 psia (1.1 bara)	20 minutes	-4 to 140 (-20 to 60)

Model L76L-UF, 20 feet with Bend, Open End Configuration, is designed and tested according to EN ISO 16852:2016, except for:

1. The piping on the unprotected side, consisted of ignition source, 15 ft of straight pipe, one 90 degree bend, 5 ft of straight pipe, then the arrestor.

2. The short time burn test was conducted at atmospheric pressure, for a time period extending past 1 minute.

3. Tested with a thin film on the end, to simulate an open-ended piping configuration.

\*No additional bends or restrictions are allowed.

\*\*See below 20 feet with bend configuration diagram:



**⚠ WARNING!**

**PIPING REDUCTIONS & EXPANSIONS**

The L76L threaded in-line deflagration arrestor may NOT be effective in stopping flame propagation in systems which have a piping reduction or expansion.

## MESG

The Maximum Experimental Safe Gap (MESG) is defined as the distance between parallel surfaces that will prevent the propagation of any gas-air mixture on one side of the gap from igniting the mixture of the same gases on the other side.

It is vital to installation and operation that the flame arrester is installed for use with the correct gas grouping and appropriate MESG.

\*The table below is a partial list of vapors for which the MESG has been measured and found to be greater than or equal to 0.035" [0.90 mm]. If your system contains a gas not listed in the table, you should research the MESG for your gas and confirm that it is  $\geq$  0.035" (0.90 mm)

Chemical Compound	MESG* (mm)	MESG (Inches)
acetone	1.02	0.040
acetonitrile	1.50	0.059
ammonia	3.17	0.125
amyl acetate	0.99	0.039
butane	0.98	0.039
butyl acetate	1.02	0.040
butyl alcohol	0.94	0.037
carbon monoxide	0.94	0.037
cyclohexane	0.94	0.037
decane	1.02	0.040
ethane	0.91	0.036
ethyl acetate	0.99	0.039
ethyl nitrite	0.96	0.038
heptane	0.91	0.036
hexane	0.93	0.037
isooctane	1.04	0.041
isopentane	0.98	0.039
isopropyl alcohol	0.99	0.039
methane	1.14	0.045
methyl acetate	0.99	0.039
methyl alcohol	0.92	0.036
methyl ethyl ketone	0.92	0.036
methyl isobutyl ketone	0.98	0.039
octane	0.94	0.037
pentane	0.93	0.037
propane	0.92	0.036
propyl acetate	1.04	0.041
propylene	0.91	0.036
vinyl acetate	0.94	0.037
vinyl chloride	0.99	0.039

\*Corrected MESG (mm), 100KpA, 20°C

### **WARNING!**

#### **CORRECT GAS GROUP APPLICATION**

*The L76L threaded in-line deflagration arrester may NOT be effective in stopping flame propagation in systems which contain vapors with an MESG less than 0.035" [.90 mm] as defined by NEC Gas Group "D".*

## INITIAL INSTALLATION

Arrestor must be applied correctly per the “Application Limitations” section shown starting on page 3.

All LAMOT in-line deflagration flame arrestors are bi-directional and can be used in vertical or horizontal piping systems. However, if installed in a horizontal orientation, care must be taken if gas service has possibility of having liquid drop out. If liquid condensation is possible, a method of removing the liquid prior to the arrestor should be implemented to avoid pressure drop and potential failure.

### **WARNING!**

#### ADJACENT PROCESS/INSTRUMENT PIPING

*No process piping, instrument piping, or any other kind of device shall circumvent the flame arrestor, that would allow a possible flame path around the arrestor. Such “bypass” piping, could allow for the flame to propagate around the flame arrestor, and thus nullify the effectiveness of the flame arrestor. If instrumentation is used on either side of the flame arrestor, measures must be taken to prevent flame propagation through the instrumentation, which would circumvent the arrestor. Any instrumentation taking measurements “around” the flame element, must be constructed to prevent flame propagation through the instrumentation; even at high temperatures and pressures.*

This series of flame arrestors have internal NPT threading. The following guidelines should be observed at installation:

1. Remove any flange protectors and discard all packing material.
2. Inspect the pipe threads and the internal threading of flame arrestor. Threads must be clean and free of scratches, corrosion and tool marks.
3. Apply appropriate thread sealant to external male pipe threads of connection piping.
4. Thread piping into the flame arrestor internal female NPT threading. Tighten so that leakage is mitigated.

### **WARNING!**

*After installation, all connections must be inspected for vapor leakage. This may be done by static test, gas detector, or “bubble” test using a leak detection solution.*

## DESIGN AND FUNCTION

LAMOT 's in-line flame arrestors are designed to prevent flame propagation in gas piping systems that contain flammable gas/vapor mixtures. The arrestor must prevent flame passage under certain specified conditions while permitting free flow of gas/vapor through the system. Thus, it protects vulnerable equipment or components of the system from damage due to explosive pressures caused by gas/vapor ignition in another part of the system. The flame arrestor must be used under only those operating conditions for which it was designed and tested.

The flame arrestors consist of two main components: the arrestor endplates and the flame element housing assembly. The endplates serve as the connecting interface to the piping system. The housing retains and supports the flame element. Both components are essential in stopping the passage of the flame.

The flame element is comprised of small parallel passageways aligned so that an approaching flame front is slowed down and then quenched before it can propagate to the protected side of the device. All LAMOT flame elements utilize spiral wound, crimped ribbon constructed of corrosion resistant materials, to ensure the best flame quenching performance with minimum pressure drop. The element is supported by rigid beams, securely welded into the housing to withstand a low-pressure deflagration.

## MAINTENANCE

For maximum operating efficiency, the element of a flame arrestor must be inspected and maintained at regular intervals. Frequency of inspection should be based on the experience gained in each application. Inspection of wetted components is recommended at least once per year or any time that one of the following conditions occur:

- Excessive pressure drop is encountered at a known flow rate.
- A flame front is detected.

Maintenance is accomplished by removing and replacing the assembly upon clogging, or after a flame event has been detected.

### **WARNING!**

*After a flame event has occurred, it is recommended that the flame arrestor unit be replaced. No guarantees are offered for flame arrestor performance after the first flame event.*

*The connecting pipeline must be free of all hazardous or flammable vapors before inspection procedures begin. Before disassembling arrestor consult Material Safety Data Sheets (MSDS) for all products that the arrestor was exposed to in service. The components should be cleaned according to the MSDS procedure. Take appropriate safety precautions regarding eye, skin contact, and respiration protection.*

## **PRODUCT LIMITED WARRANTY**

Only Groth's Product Limited Warranty terms apply to purchase orders accepted by Groth Corporation for LAMOT product.

Seller warrants that products that are manufactured by Seller are manufactured in accordance with published specifications and free from defects in materials and/or workmanship for a period of (12) twelve months. Seller, at its option, will repair or replace any products returned intact to the factory, transportation charges prepaid, which Seller, upon inspection, determines to be defective in material and/or workmanship. The foregoing shall constitute the sole remedy for any breach of Seller's warranty.

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LAMOT® Valve & Arrestor has representatives throughout North America.  
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