



ANDERSON GREENWOOD AMAL CIR SERIES FLAME ARRESTERS

INSTALLATION & MAINTENANCE INSTRUCTIONS

1. GENERAL

Flame arresters are intended for use in piping systems handling flammable gases/vapors. The CIR unit is designed to protect piping systems and equipment from deflagrations that have occurred in associated piping/equipment or external to the vent piping and is mounted within the pipework configuration. It is not suitable for preventing flame transmission due to detonations.

2. GUIDANCE

1. Maximum temperature limit -20° to +60°C. Maximum pressure limit is 6.7 bar.
 2. ONLY install for applications for which they have been designed and specified and within their tested/certified limitations – refer to product data sheet for guidance. It is potentially dangerous to use in other applications.
 3. Mounting of all monitoring devices shall be in accordance with EN 50018.
 4. Flame arresters should not be positioned near hot equipment unless certified for the elevated temperature as heat transfer to the flame arrester will reduce its performance and may cause it to fail.
 5. Shut-off devices should be fully open during normal operation.
 6. Continuous monitoring of pressure drop is advised if the process is known to contain particulates or substances which can block the element and over-pressure the system.
 7. Metal parts insulated by gaskets should be earthed where necessary.
 8. Flame velocities and pressures of flammable mixtures can be enhanced by upstream turbulence, which can be caused by bends, valves or any change in section of the pipework. The flame arrester should only be used for the process application; if the process conditions or the pipework configuration change, the flame arrester should be checked with the manufacturer.
2. Remove all packaging from the flame arrester prior to installation, paying particular attention to the inlet and outlet housing sections. Mount the flame arrester into the pipeline in the orientation for which it has been designed. Amal CIR types are normally bi-directional and can be fitted either way round unless they are made one directional by accessories fitted to the inlet or outlet housing sections only – in this case a directional arrow is included showing the direction of normal flow:
Flanged connection – bolt to a flange of the same specification as that fitted to the flame arrester itself, with an intermediate gasket of a type appropriate to the service conditions. Tighten the bolting uniformly to give a good seal.
 3. Ensure that any accessory nozzles are fitted with the necessary accessories or with plugs/blanking flanges as appropriate.
 4. When appropriate, it is recommended that a protective cage be installed to guard the flame arrester against accidental impact from vehicles or heavy falling objects.

3. INSTALLATION

1. Tooling appropriate to the working area should be used (see EN 1127-1 Annex A). Only standard sized spanners as appropriate and lifting gear for larger units, where applicable, are required.

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4. MAINTENANCE

Maintenance should only be carried out by suitably qualified personnel.

It is recommended that the flame arrester element be inspected at each scheduled plant maintenance period. Particles within the process may cause blockage to the element cells, impairing the free flow of gases/vapors. If excessive pressure drop is experienced, or after any flashback or incident, immediate inspection should be made.

Where a process is known to be 'dirty', a pressure-limiting device installed within the associated pipeline is strongly recommended. If the element is found to be damaged or distorted a new replacement unit should be fitted. Type and size details can be found on the stainless steel nameplate attached to the housing.

1. CIR series flame arresters are designed to allow inspection and maintenance in situ, however, this should only be done if it is safe to do so.

Note: potentially toxic substances may have been passing through the flame arrester. Always wear appropriate safety equipment, with eye protection, when working on or near flame arresters.

2. Loosen the bolting around the central flanges containing the element assembly/assemblies. Separate the central flanges, using any jacking bolts that may be fitted to the flame arrester or other appropriate means, by an amount sufficient to allow removal of the gaskets and element assembly/assemblies. Note that where unsupported backing flanges have been used this may not be possible and the complete flame arrester may have to be taken from the pipeline. No special tools are required. Standard spanners and lifting equipment for larger sizes of flame arrester, are required.
3. Remove sufficient bolting to allow the gaskets and element assembly to be removed or, where a swing out element assembly is fitted, for it to be swung out for inspection.
4. Remove the element(s), using lifting equipment where appropriate and examine both surfaces.
DO NOT insert any probes into the element.
5. If the element matrix is visibly damaged or corroded it must be replaced before the flame arrester is returned into service. If cleaning is required see Section 5 for warnings and recommendations.
6. Check that the sealing face of the housing is clean and free from particles that may affect the sealing of the element.
NOTE: Any gaps between the housing and gaskets/element may provide a flame path around the flame arrester element and are therefore DANGEROUS.

7. Fit new gaskets of the same specification and re-fit the element(s) ensuring that it is located centrally – there may be locating collars fitted to some of the bolts to assist in this.
8. Where more than one element is fitted ensure that all lifting eyes are in complete alignment.
9. Replace the bolting and tighten to the appropriate torque.
10. After any external fire in the locality of the flame arrester, it is recommended that the equipment be examined for damage, with particular attention paid to the joint gaskets, replacing them if necessary. Also check the tightness of the flange bolting and re-tighten if necessary.

5 CLEANING THE ELEMENT ASSEMBLY:

In order to clean the element it is necessary to remove the flame arrester from the pipeline.

Wash the complete flame arrester in a suitable solvent, then blow through with compressed air.

Note: potentially toxic substances may have been passing through the flame arrester.

Always wear appropriate safety equipment, with eye protection, when working on or near flame arresters.

- A. DO NOT attempt to remove the element matrix from its cage/casing.
- B. DO NOT allow the element assembly to become blocked severely.
- C. DO NOT clean by inserting probes into the cell structure.
- D. DO NOT use excessively corrosive materials (e.g. hydrochloric acid) to clean the element.
- E. High-pressure water jets are NOT recommended.
- F. The following ARE recommended:
detergents, solvents, compressed air, steam or ultrasonic.
The actual cleaning method will depend on the nature of the substance causing the blockage.
- G. If the element is damaged during cleaning a NEW element assembly should be fitted. If in doubt refer to the factory or your nearest representative for advice.
After inspection and cleaning, refit the flame arrester in the line using new joint gaskets of the correct specification. Replace the bolting and tighten appropriately.

6. SPARE PARTS

Under normal conditions only the element assembly + gaskets should need replacement. It is recommended that for every three flame arresters of a given type at any one site at least one spare element assembly is available at all times. When requesting replacement flame arresters, the full type code, part number and serial number MUST be quoted – fitting the incorrect unit is potentially DANGEROUS. See the flame arrester label for details.

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7. AFTER SALES SERVICE

Available through the relevant Emerson office in the United Kingdom or through our worldwide network of regional offices and agents.

8. SPECIAL CONDITIONS FOR SAFE USE

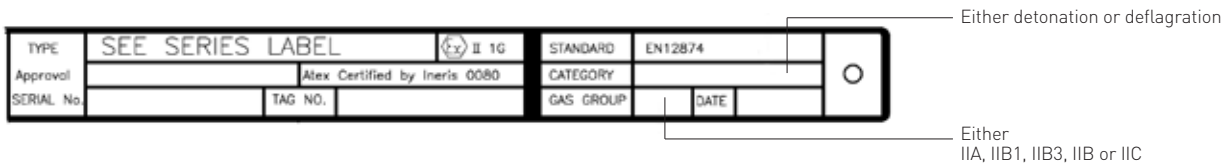
For IIA, IIB1, IIB3, IIB and IIC hydrogen only the manufacturing is intended for sizes DN 50 (2") to DN 300 (12") for type CIR.

9. MARKING ON THE FLAME ARRESTER (CE PLATE)



10. MARKING ON THE FLAME ARRESTER (NAMEPLATE)

Additionally, the nameplate can be marked for gas group IIB.



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