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INSTALLATION AND MAINTENANCE INSTRUCTIONS

INTRODUCTION

Flame arresters and their replaceable elements are fitted with nameplates (refer to figure 1), stating the following information:

- Full name, address, telephone, and fax numbers of manufacturer.
- Burn rating group (BC) and short time burn duration.
- The specific marking of explosion protection.
- Notified body number.
- Nominal bore size of arrestor/element.
- Maximum operating pressure.
- Maximum run-up distance (Lu/D) – Not applicable to this product.
- Model number of flame arrester/element.
- Maximum operating temperature.
- Explosion group for which the arrester/element may safely be used.
- Year of construction.
- Elmac serial number of flame arrester/element (quote when requesting spare parts).
- The ATEX certificate number.

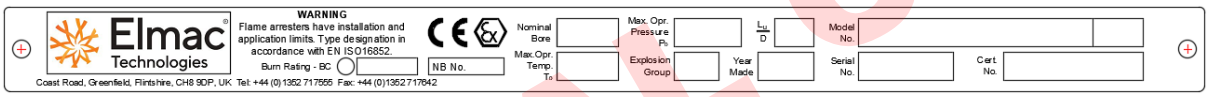

Figure 1 – Nameplate General Layout

Caution! Always ensure that the system is at atmospheric pressure and there is no hazardous gas present including any flammable gas or vapor that could flash when either installing or maintaining a unit.

Elmac EVB & EHB end-of-line deflagration flame arresters are not suitable for situations where continuous burning of a flame could stabilize on or near to the surface of the element.

INSTALLATION

Warning: Flame arresters have installation and application limits.

Flame arresters must be installed in accordance with this IOM. If there is any doubt, please contact Elmac Technologies Limited.

Caution!

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4	Scan QR code added and Elmac logo updated.	D. Greenough	29.06.2021
3	Element Replacement Appendix Included.	R. Wilkes	28.05.2021
2	Format updated, and additional cautions added relating to installation.	D. Greenough	28.09.2017
1	First Issue.	O. Tuncer	13.08.2013

Description:	**Installation & Maintenance Instructions for EVB & EHB Series End-Of-Line Deflagration Flame Arresters (ATEX)**		
Drawn By:	Ozkan Tuncer	Date:	15.07.2013
Checked By:	D. Greenough	Date:	29.06.2021

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1. Please inspect the equipment when it is received and report any damage (if any).

2. Connection flanges are generally protected where possible. The customer must check and remove any 'Transport Protection' and 'Flange Protectors' prior to installation.

3. Inspect the equipment for physical damage or internal contamination before installation and use of the equipment.

1. It is essential that Elmac end of line deflagration flame arresters are only used in the application and with the explosion group for which they were supplied (as stated within our written quotation). Materials of construction must be compatible with the gas mixture and the environment in which the unit is to operate. This is particularly important if the flame arrester is to be used in corrosive applications. Contact the Elmac technical sales department for advice.

2. Always ensure that the fixings available on the pipe work (e.g. flange type, screw thread) are compatible with that on the flame arrester. For flange fixings, use the correct fasteners and gaskets for the flange size and type. Always use the correct washers as this prevents damage caused by bolt heads and nuts on tightening up. Gaskets should be capable of withstanding the same temperatures and pressures as the flame arresters being installed.

3. End-of-line deflagration flame arresters should be positioned so that the element is accessible for removal.

4. **SPECIAL CONDITIONS FOR SAFE USE:**
   The user/installer shall be cognisant of the critical parameters which will be detailed on the fitted nameplates (refer to figure 1 - Nameplate General Layout).

MAINTENANCE

1. **Maintenance and inspection are the responsibility of the end user and not of Elmac Technologies Limited.**

2. Flame arresters shall be inspected on a regular basis to ensure that no build-up of solids or liquids occurs in the element as this will adversely affect the performance of the unit during process flow conditions. The maintenance interval is mainly governed by the amount and type of particulates in the system in which the unit is installed and must be determined by the user. The user should check the element in the first few months of operation to find out how quickly particulates accumulate. After cleaning, the element should be thoroughly inspected for damage. Flame arrester shall also be

inspected if a flashback is known or suspected to have occurred. If the flame arrester element is damaged, it must be replaced.

3. Depending upon the particular installation, it may be possible to inspect the element with the flame arrester in situ. However, if this is not possible, then the element will have to be removed from the flame arrester for inspection in the case of flame arresters with replaceable elements. Should the flame arrester have a fixed element, then the whole flame arrester will need to be removed from the pipe work for inspection. **Element assemblies can be heavy and adequate equipment and manpower may be required to prevent injury when handling.**

4. Elements may be cleaned with any suitable solvent. Steam cleaning may also be effective. After cleaning, the element needs to be dried by compressed air blow. If the arrester element cannot be cleaned satisfactorily, it shall be replaced. If any deformation is observed, then the element shall be replaced. It is advisable to hold spares in stock in site stores. Always use Elmac replacement parts and quote the flame arrester serial number when ordering spare elements or other parts.

5. Removal and replacement of elements (and/or weather hoods when fitted) should be undertaken with care and all washers, spacers and fasteners must be replaced exactly as originally fitted. **Element gaskets shall be replaced every time the flame arrester body is loosened or dismantled for element maintenance and inspection and must be replaced exactly as originally fitted. See Appendix A for guidance on element replacement.**

   Always use the new gaskets supplied with spare elements and ensure that mating faces are clean. Refer to the next section for guidance on gasket installation.

6. For installations that require frequent maintenance and minimum downtime, it is recommended that the user should purchase a spare element and several spare element gaskets. This spare element can be installed immediately, and the dirty element can then be cleaned and stored as a spare ready for the next maintenance interval.

FLAME ARRESTOR ELEMENT GASKET INSTALLATION & TORQUE VALUES

Gasket Installation Guidelines:

1. Clean both flanges of all old gasket material (Figure 2). If the surfaces are oily, clean with a solvent so that the sealant adhesive strip will adhere properly.
2. Peel off some of the protective tape from the adhesive strip and install by gently pressing the sealant into position around the inner edge of the arrester body flange. Continue peeling off the protective tape as the sealant is applied.

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3. Overlap or cross the ends of the sealant to complete the seal. Refer to Figure 3.
4. Customers are advised to keep minimum 1(one) spare gasket on-site at all times.

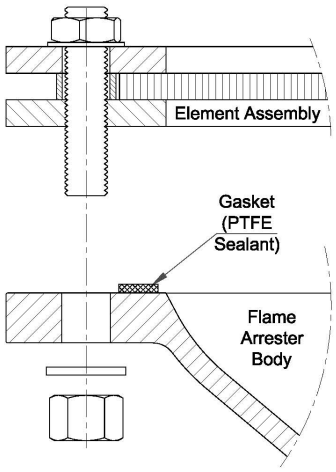

Figure 2 – Gasket Installation (Section View)

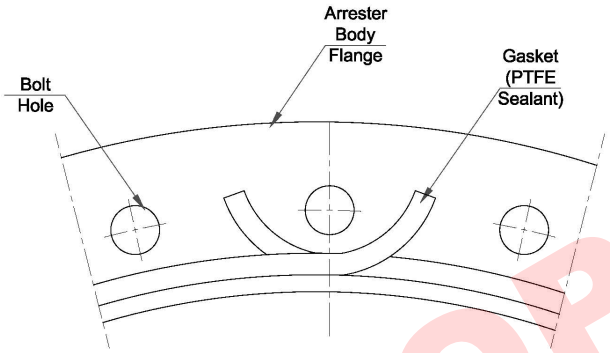

Figure 3 – Gasket Installation (Plan View)

ELEMENT ASSEMBLY TORQUE VALUES

Bolt Size	Socket / Spanner Size (mm)	Torque settings - Nm (lbf.ft)			
		Step 1	Step 2	Step 3	Full Torque
M10	17	15Nm (11lbf.ft)	N/A.	N/A.	30Nm (22lbf.ft)
M16	24	37Nm (28lbf.ft)	N/A.	N/A.	75Nm (55lbf.ft)
M20	30	37Nm (28lbf.ft)	75Nm (55lbf.ft)	N/A.	105Nm (77lbf.ft)
M24	36	37Nm (28lbf.ft)	75Nm (55lbf.ft)	112Nm (82lbf.ft)	150Nm (110lbf.ft)

Use the specified torque values for each corresponding fastener size. Follow the same torqueing sequence as follows. In case of two different size fasteners on the same element assembly, first tighten the smaller size fasteners to the required torque values. Then follow the same procedure for larger fasteners.

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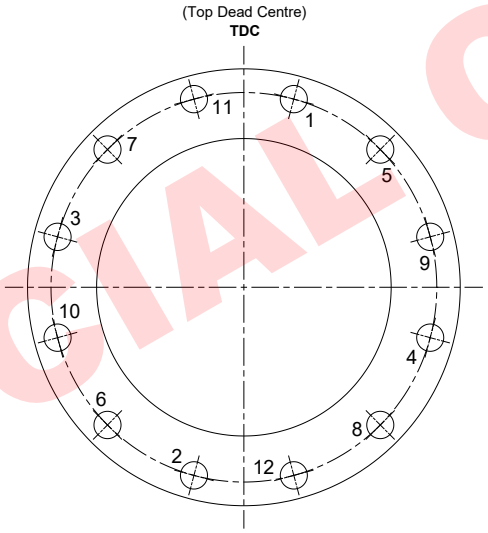
CONNECTION FLANGE TORQUE VALUES

Bolt Size	Socket / Spanner Size (mm)	Torque settings - Nm (lbf.ft)			
		Step 1	Step 2	Step 3	Full Torque
M10	17	20Nm (15lbf.ft)	N/A.	N/A.	40Nm (29lbf.ft)
M12	19	40Nm (30lbf.ft)	N/A.	N/A.	70Nm (51lbf.ft)
M16	24	50Nm (37lbf.ft)	N/A.	N/A.	100Nm (73lbf.ft)
M20	30	50Nm (37lbf.ft)	100Nm (73lbf.ft)	N/A.	140Nm (103lbf.ft)
M24	36	50Nm (37lbf.ft)	100Nm (73lbf.ft)	150Nm (110lbf.ft)	200Nm (147lbf.ft)
M27	41	50Nm (37lbf.ft)	100Nm (73lbf.ft)	150Nm (110lbf.ft)	200Nm (147lbf.ft)
M30	46	50Nm (37lbf.ft)	110Nm (81lbf.ft)	170Nm (125lbf.ft)	220Nm (162lbf.ft)
M33	50	70Nm (51lbf.ft)	140Nm (103lbf.ft)	210Nm (154lbf.ft)	280Nm (206lbf.ft)
M36	55	70Nm (51lbf.ft)	160Nm (118lbf.ft)	240Nm (177lbf.ft)	300Nm (221lbf.ft)



Torquing Sequence

Base torque on the above sketch. However, allow for flanges with different number of bolt holes

IN THE EVENT OF ANY QUERY PLEASE CONTACT OUR TECHNICAL SALES DEPARTMENT

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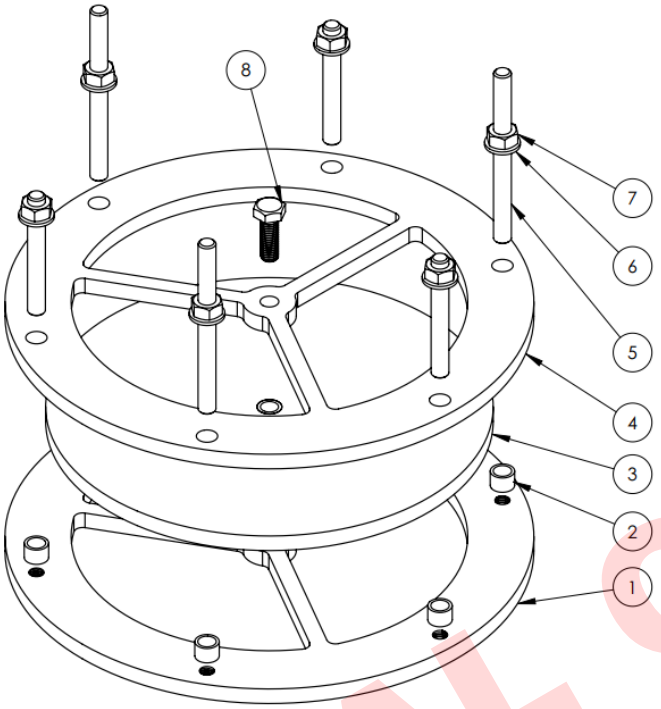
APPENDIX A – ELEMENT REPLACEMENT



PART NO.	DESCRIPTION
1	Bottom Ring
2	Element Spacer
3	Crimped Ribbon Element
4	Top Ring
5	Stud
6	Washer
7	Nut
8	Centre Bolt

Figure 4 – Element Assembly Exploded View

Use figure 4 for guidance when replacing the Crimped Ribbon Element (3).
Take care when handling the Crimped Ribbon Element (3) - it can be easily damaged.
Always check the marking on the periphery of the crimped ribbon element (3) to ensure the replacement element is the correct size and for the correct explosion group.
When reassembling the Flame Arrester, all element assembly bolting (5,6,7,8) is to be torqued as per the values given in the element assembly torque table (page 4).

1. Undo the element bolting (5,6,7,8) and separate the top and bottom element rings (4,1). Take care to ensure the Element Spacers (2) do not go missing.

2. Carefully remove and replace the crimped ribbon element (3). Ensure the contact surfaces of the top and bottom rings (4,1) are free from dirt and contaminants before reassembly.

3. Reassemble in the reverse order.

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