

# EN-DFA Series Detonation Flame Arrestor (ATEX Approved)

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Figure 1. Typical EN-DFA Series Detonation Flame Arrestor

**WARNING**

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Enardo detonation flame arrestor must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies Tulsa, LLC instructions.

Failure to correct trouble could result in a hazardous condition. Call a qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may

result in equipment damage or personal injury. Only a qualified person must install or service the detonation flame arrestor.

## Introduction

### Scope of the Manual

This Instruction Manual provides instructions for installation, startup, maintenance and parts ordering information for the EN-DFA Series detonation flame arrestor.

### Flame Arrestor Classification

The flame arrestors within the scope of this document have been tested and certified as unstable detonation arrestors and are therefore suitable for deflagrations, stable detonations and unstable detonations as defined by EN ISO-16852. This is the highest performance rating available for a detonation arrestor and it exceeds the performance rating of an arrestor certified for stable detonations and deflagrations only.

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# EN-DFA Series

## Specifications

The Specifications table lists the specifications for the detonation flame arrestors. The following information is stamped on the nameplate attached to the arrestor: model number, flange size and rating, maximum initial operating pressure, EN number (European Standard), EC type examination certificate, notified body number, gas group, date of manufacture and serial number; other identification and customer tag number are optional.

<p><b>Available Constructions</b> See Table 1 and Figure 3</p> <p><b>Gas Group</b> IIA and IIB3</p> <p><b>Flange Sizes and Rating</b> 2 to 12 inches / 50 to 300 mm CL150 RF and CL150 FF</p> <p><b>Housing Size</b> 4 to 26 inches / 100 to 660 mm</p> <p><b>Maximum Experimental Safe Group (MSEG)</b> See Table 4</p> <p><b>Maximum Initial Operating Pressure</b> 17.7 psia / 1.22 bar a</p>	<p><b>Operational Temperature (T<sub>o</sub>)<sup>(1)</sup></b> -4 to 140°F / -20 to 60°C</p> <p><b>Temperature Rating of Fiber Gasket<sup>(1)</sup></b> 450°F / 232°C</p> <p><b>Burning Time Rating</b> Less than 1 minute</p> <p><b>Housing Material</b> Carbon steel, 304 Stainless steel, 316 Stainless steel and Hastelloy®</p> <p><b>Element Material</b> 304 Stainless steel, 316 Stainless steel and Hastelloy®</p> <p><b>EN Number (European Standard)</b> EN ISO-16852 Certified</p>
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1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

**Table 1. EN-DFA Series Detonation Flame Arrestor Available Construction (ATEX Approved)**

MODEL	FLANGE SIZE		HOUSING SIZE	
	Inch	mm	Inch	mm
EN-DFA-0402	2	50	4	101
EN-DFA-0603	3	75	6.6	168
EN-DFA-0804	4	100	10	254
EN-DFA-1206	6	150	14	356
EN-DFA-1608	8	200	18	457
EN-DFA-2010	10	250	22	559
EN-DFA-2412	12	300	26	660

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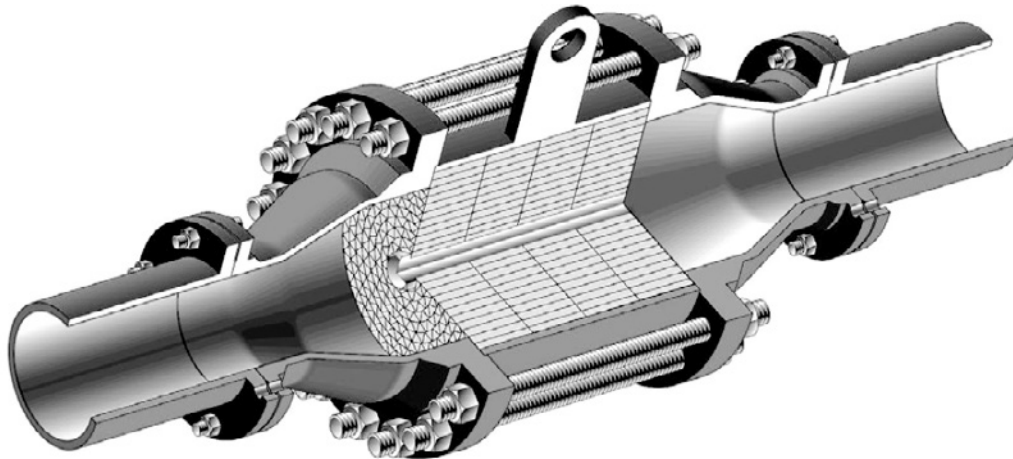


Figure 2. Cut-away view of EN-DFA Series Detonation Flame Arrestor

EN	DFA				/		-				-			
	Detonation Flame Arrestor	Housing Size	Connection Size			IEC Gas Group		Housing Material	Element Material	Connection Type				Options
	(Concentric)	04 = 4 inches through 26 = 26 inches	02 = 2 inches through 12 = 12 inches			IIA (D) IIB3 (C)		C = Carbon Steel 4 = 304 SST 6 = 316 SST H = Hastelloy®	4 = 304 SST 6 = 316 SST H = Hastelloy®	F = Flat face flange R = Raised face flange				1 = Drain Plug 2 = Pressure Tap 3 = Temperature Probe Tap (standard) 4 = Miscellaneous 5 = Protective coating 6 = Special feature

Figure 3. EN-DFA Series Detonation Flame Arrestor Available Constructions and Model Numbering System

## Product Description

The EN-DFA Series detonation flame arrester represents the best value in flame arrester protection. The detonation flame arrester provides protection against flame propagation in piping systems that are manifolded or have long run-up distances. These are typically used for extended pipe length or multiple pipe bend configurations to stop high pressures and flame velocities with detonations and overdriven detonations. It also stops confined and unconfined, low and high pressure deflagrations. The design is unique in the ability to provide large flame channels which requires less frequent maintenance and greater ease in cleaning when service is required, translating to less down time. EN-DFA Series detonation flame arrestors are bi-directional and proven to stop an ignited flammable vapor mixture approaching from either direction that can be travelling at subsonic or supersonic velocities. The patented element offers maximum flow to pressure drop characteristics enhancing the value of the flame arrester in any system.

The EN-DFA Series is designed with flanged connections, the arrester provides the option of the removal of the flame cell element for easy cleaning and replacement without disconnecting of the pipe connection.

## Principle of Operation

Detonation flame arrester prevents flame propagation as it enters the exposed side of the unit to the protected side by absorbing and dissipating heat using spiral wound crimped ribbon flame cells. This detonation flame arrester utilizes a patented element assembly that dampens the high velocities and pressures associated with deflagrations and detonations while quenching the flame front. These cells allow maximum flow with maximum protection.

Detonation flame arrester has the heat capacity and structural design to withstand all the dynamic conditions of flame propagation and still stop the flame. Detonation flame arrester is used when the flame can be in any of the detonation states.

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# EN-DFA Series

<b>WARNING</b>			
Flame Arrestors have installation and application limits Type designation in accordance with EN ISO-16852:2010			
DET 2	$L_v/D = n/a$	BC: b; $t_{BT} = 1$ min	
	Ex. G IIA	$T_o = 60^\circ\text{C}$	$P_o = 122.3$ kPa (absolute)

MARKING PLATE OF EN-DFA-0402/IIA THROUGH EN-DFA-1206/IIA (SEE TABLE 2)

<b>WARNING</b>			
Flame Arrestors have installation and application limits Type designation in accordance with EN ISO-16852:2010			
DET 2	$L_v/D = n/a$	BC: b; $t_{BT} = 1$ min	
	Ex. G IIA	$T_o = 60^\circ\text{C}$	$P_o = 166.3$ kPa (absolute)

MARKING PLATE OF EN-DFA-1608/IIA THROUGH EN-DFA-2412/IIA (SEE TABLE 2)

<b>WARNING</b>			
Flame Arrestors have installation and application limits Type designation in accordance with EN ISO-16852:2010			
DET 2	$L_v/D = n/a$	BC: b; $t_{BT} = 1$ min	
	Ex. G IIB3	$T_o = 60^\circ\text{C}$	$P_o = 118.3$ kPa (absolute)

MARKING PLATE OF EN-DFA-0402/IIA THROUGH EN-DFA-2412/IIB3 (SEE TABLE 2)



**Figure 4. Product Identification and Marking**

**Table 2. Marking Plate Information**

INFORMATION	DESCRIPTION
DET	Indicates product is a Detonation Flame Arrestor
2	Tested for unstable detonation without restriction
$L_v/D = n/a$	The ratio of pipe length (between the potential ignition source and the flame arrestor) and pipe diameter. It indicates unlimited
BC: b	Indicates the flame arrestor is for short-time burning not to exceed 1 minute
Ex. G IIA	Indicates the arrestor is rated for use in Explosion Group IIA vapors
Ex. G IIB3	Indicates the arrestor is rated for use in Explosion Group IIB3 vapors
$T_o$	Indicates maximum operational temperature of flame arrestor
$P_o$	Indicates maximum operational pressure of flame arrestor

**Table 3. Maximum Experimental Safe Gap (MESG)**

NATIONAL ELECTRIC CODE (NEC)	MESG		TEST GAS LIST
	Inch	mm	
Group IIA	0.035	0.90	Propane
Group IIB3	0.026	0.65	Ethylene

## Factors Affecting Flame Arrestor Performance

### Gas Group

The type of gas in the system determines its gas grouping and therefore predetermines the type of arrestor element required. The element must be designed to accommodate the specific gas group that could possibly ignite and propagate in the system. The more explosive gases require the flame cell to absorb the heat more quickly and efficiently. The International Electrotechnical Commission (IEC) groups gases and vapors into Groups IIA through IIC categories depending on a number of factors including the Maximum Experimental Safe Gap (MESG) of the gas.

### Maximum Experimental Safe Gap (MESG)

The MESG is the measurement of the maximum gap between two equatorial flanges on a metal sphere that will prevent a flame from being transmitted from the sphere to the surrounding flammable mixture. MESG is dependent on gas composition. The stoichiometric mixture (the ideal air/fuel ratio for the most efficient combustion) is used to determine the minimum MESG for a given gas.

### Burn Time Rating

#### WARNING

**Temperature sensors must be used with this product if there is a potential for stabilized burning inside the arrestor. Additional external safety equipment is required to ensure appropriate corrective measures are taken to protect the system if an abnormal temperature is detected. Never disconnect or remove these devices in active process systems.**

All detonation flame arrestors are rated for short time burning not to exceed one minute in accordance with EN ISO-16852. A threaded port, normally 3/4 NPT, is integrated into each end section. If there is a potential for stabilized burning in the system, a temperature sensor must be installed into the threaded port on the unprotected side of the arrestor in order to detect the presence of a stabilized flame inside the detonation flame arrestor. This is the side nearest the potential source of ignition.

Temperature sensors may be provided by Enardo and included with the arrestor at the time of shipment or may be provided by and installed by the customer prior to installation. The temperature detector must be installed for compliance to EN ISO-16852 short time burn rating. If no temperature detector is installed, the detonation flame arrestor is not suitable for short time burning or for any application that includes a potential for a flame to stabilize within the detonation flame arrestor.

### Pipe Length

Extended lengths of pipe allow the flame to advance into more severe states of flame propagation such as high pressure deflagrations and detonations. Although the detonation flame arrestor is not limited by pipe length, using a minimum length is a preferred design and installation practice.

### Bends and/or Flow Obstructions

#### CAUTION

**For maximum safety, avoid bends and flow obstructions within 10 pipe diameters but not less than 10 ft / 3 m on the protected side of the detonation flame arrestor.**

Bends in piping, pipe expansions and/or contractions, valves, orifice plates or flow obstructing devices of any kind cause turbulent flow. Turbulent flow enhances mixing of the combustible gases, greatly increasing the combustion intensity. This can result in increased flame speeds, higher flame temperatures, and higher flame front pressures than would occur in normal flow conditions. Obstructions in protected side piping can cause reflective pressures that might inhibit the effective performance of the EN-DFA Series under certain conditions.

### Installation

#### WARNING

**Always make sure that the system is at atmospheric pressure and there is no ignitable gas that could flash when either installing or maintaining the unit.**

# EN-DFA Series

## Connection

EN-DFA Series are normally provided with CL150 or PN 16 raised or flat faced flanges. Other flanges are sometimes provided on special request. Make sure the companion flanges installed in adjacent piping match the flanges on the detonation flame arrester.

Standard compressed fiber gaskets that will withstand temperatures of 450°F / 232°C or higher are normally used, but other materials of equal or higher temperature capability may be used at the customer's discretion.

## Flow Direction

This EN-DFA Series is bi-directional and can be installed either vertically or horizontally. Consideration should be given to non-symmetrical assemblies that include features such as clean-out ports, temperature sensors or other devices that might have a preferred installation direction to suit the needs of the customer. Compliance with warning associated with temperature sensors is essential. See Burning Time Rating Section, page 5.

## Positioning

### WARNING

**If the detonation flame arrester is equipped with a single factory installed temperature sensor, the arrester shall be installed with the sensor on the unprotected side of the arrester, the side nearest the potential source of ignition.**

### CAUTION

**The detonation flame arrester is fitted with lugs for lifting the element assembly during servicing operations. These lugs are not intended for lifting the entire unit during installation. Damage to the detonation flame arrester may result from improper lifting. The unit should be lifted using appropriately rated Nylon (PA) straps rigged on the outside of the tension studs.**

The arrester should be positioned such that the entire arrester is accessible for removal. Models that have drain plugs are designed for horizontal installation

and should be installed with the drain plugs aligned at the bottom of the unit. Models that have pressure taps are designed to allow pressure gauges to be installed on both sides of the flame cell assembly to determine blockage. The pressure taps should be aligned at the top to allow easy viewing of the gauges. Units that are equipped with optional internal cleaning systems should be connected to a source of cleaning media such as water, steam or other suitable solvent. Observe recommended installation practice as previously described.

## Piping Expansions and Reductions Adjacent to Detonation Flame Arrester

### WARNING

**No instrument, tubing or other device whatsoever shall circumvent the detonation flame arrester in such a manner to allow a flame path to exist around the flame element of the arrester. When instrumentation is installed in such a manner that it creates a path circumventing the flame element of an arrester, measures must be taken to prevent passage of flame through the instrumentation device and/or system. Instrumentation must be capable of withstanding the maximum and minimum pressures and temperatures to which the device may be exposed and at a minimum be capable of withstanding a hydrostatic pressure test of 350 psig / 24 bar.**

An EN-DFA Series detonation flame arrester may be installed in any vapor control line that is smaller than or equal to the nominal pipe diameter of the arrester's connection flanges. When it is necessary to increase the diameter of the piping on the downstream side (unprotected) of the detonation flame arrester, a length of pipe at least 120 pipe diameters must be installed between the detonation flame arrester and the expansion. A pipe diameter is considered as the inside diameter of pipe having a nominal size equal to the detonation flame arrester's connecting flanges.

## Maintenance



### WARNING

**Isolate gas supply and bring system to atmospheric pressure to prevent ignitable gas from flashing while performing maintenance.**



### CAUTION

**The flame cells in the arrestor's element assembly are not retained once the element assembly has been removed from the arrestor. They can slide out of the housing during handling. It is recommended that the element assembly only be removed after the entire arrestor has been removed from the piping system.**

## Element Disassembly

1. Loosen all nuts on tension studs between conical sections of the detonation flame arrestor.



### CAUTION

**Element assemblies are heavy and will require the use of adequate equipment and manpower to prevent injury.**

2. Carefully force the two conical sections apart while the nuts are still on the tension studs. When the two flange faces have separated, remove enough of the tension studs such that the element assembly can be removed. Not all studs are required to be removed to be able to rotate the element assembly out of the housings. It is possible for the elements to come out of the housing once the end sections have been removed.

## Inspecting and Cleaning the Flame Cells

1. Inspect flame cells for damage immediately following a deflagration, detonation and/or stabilized burn.
2. Carefully remove the element assembly from the arrestor. Place the element assembly on a soft surface such as plywood and push the flame cells from the housing. It might be necessary to tilt the housing to facilitate removal of the flame cells.

3. Note the order in which the flame cells were removed. You will notice that the two outboard flame cells are 4 inches / 102 mm thick and that the two inboard flame cells are 2 inches / 51 mm thick. A screen of expanded metal is located between each adjacent set of flame cells.
4. Inspect the flame cells and the screens visually for any signs of corrosion or other damage and inspect the flame cells with a calibrated pin gauge to ensure maximum crimp size openings do not exceed the following values for their respective gas group:
  - Explosion Group IIA – 0.051 inch / 1.295 mm
  - Explosion Group IIB3 – 0.0216 inch / 0.549 mm
5. If any damage is noted or crimp openings exceed maximum size allowable, the flame cells and/or the screens must be replaced.

### NOTE

**Under no circumstance shall any other screens not provided by Enardo be used in this assembly. Failure to use the correct screens may lead to arrestor failure.**

6. It is important to keep the element openings clean to prevent loss of efficiency in absorbing heat. The element assembly should be removed and the elements cleaned to prevent the openings from becoming clogged with particulate matter or other contaminants. Clean the element with a suitable cleaning media (solvent, soap, water or steam) then blow dry using compressed air. Special care should be taken not to damage or dent the cell openings as this would hamper the effectiveness of the unit. Arrestor elements shall not be cleaned by rodding with wire or other hard objects to remove blockages, as this practice could damage the elements and seriously impair the arrestor's performance. If the arrestor element cannot be cleaned satisfactorily, it must be replaced.
7. For best cleaning results, a high pressure sprayer with spray wand should be used (1500 to 3000 psig / 103 to 207 bar) to clean the entire element surface. The spray nozzle should be held perpendicular to the surface being cleaned to maximize spray media penetration into the element. Alternately spray each side of the element surface until clean.

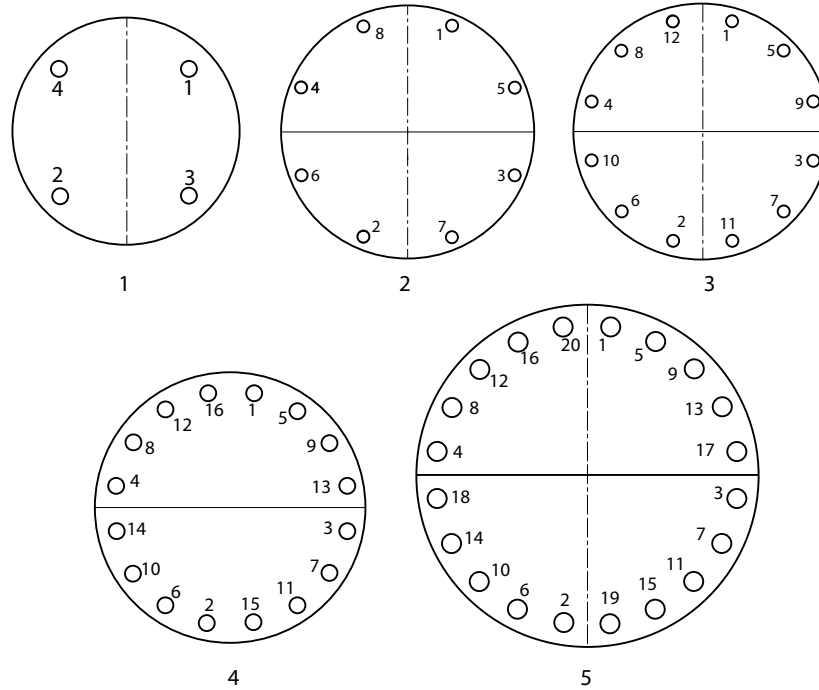


Figure 5. Flange Pattern Tightening Sequence

8. The cleaning interval should be governed by the amount and type of particulate in the system to which it is installed and must be determined by the user. To determine the maintenance interval the user should check the element in the first few months of operation to find how quickly particulate accumulates in the cells.
9. Thoroughly clean the gasket sealing faces being careful not to damage the sealing surface. For reassembly a new gasket must be used and placed in the machined recess of each interior flange on the two conical sections.
10. Replace the flame element assembly with a new assembly or properly cleaned and inspected existing unit.
11. Locate the flame cell assembly such that it seats onto the gaskets.
12. Replace all tensioning studs and tighten the outer nuts hand tight only.
13. Torque the bolts in sequence as shown in the following instructions

## Torquing Instructions



**CAUTION**

**Excessive or uneven torque can cause permanent damage to gaskets and housing.**

### Tools/Supplies Required

- Hand operated conventional torque wrench or power assisted torque wrench appropriate for the specified torque.
- Socket wrenches of the proper size to fit the hex nuts being tightened.
- Molydisulfide based lubricating paste. Molykote® G-n or equivalent.
- Brush suitable for applying lubricant to the studs.
- Wiping rags necessary for the clean up of excessive lubricant.

Molykote® G-n is a mark owned by Dow Corning Corporation.



**Table 4. Tightening Steps and Torque Values<sup>(1)</sup>**

MODEL	PATTERN <sup>(2)</sup>	BOLT SIZE	TIGHTENING STEPS AND TORQUE (ft-lb / N•m)							
			1	2	3	4	5	6		
EN-DFA-402	1	5/8-11	Snug	10 / 14	35 / 47					
EN-DFA-603	2	3/4-10	Snug	30 / 41	80 / 108					
EN-DFA-804	2	3/4-10	Snug	50 / 68	100 / 135				160 / 217	
EN-DFA-1206	3	7/8-9	Snug	50 / 68	100 / 135				175 / 237	
EN-DFA-1608	4	1-8	Snug	50 / 68	120 / 163				200 / 271	285 / 386
EN-DFA-2010	5	1-1/8-8	Snug	50 / 68	120 / 163				200 / 271	310 / 420
EN-DFA-2412	5	1-1/4-8	Snug	75 / 102	150 / 203	280 / 380	400 / 542	535 / 725		

1. Using machine oil as lubricant. See Bolt Lubrication section on page 10 and torque correction factors for other lubricants in Table 5.  
2. See Figure 5.

**Table 5. Torque Correction Factors for Common Lubricant**

DESCRIPTION	COEFFICIENT OF FRICTION	MULTIPLY TORQUE VALUE IN TABLE 4 BY
Machine Oil	f = 0.15	1.00
API SA2 Grease	f = 0.12	0.80
Neverseez® (Ni base)	f = 0.11	0.73
Neverseez® (Cu base)	f = 0.10	0.67
Molykote® G-n Paste	f = 0.06	0.40

## Procedure

1. Use studs and nuts that are free of visible contamination and corrosion.
2. Apply lubricant to the threads of the stud protruding outboard of the interior flanges and to the face of the hex nuts which will contact the flange.
3. Assemble the nuts to the studs such that the amount of thread extending outboard beyond the nut is approximately equal on both ends.
4. Tighten the nuts to the torque values shown in Table 4 following the designated sequence, repeating the sequence as shown. Flange pattern tightening sequences are shown in Figure 5.

## Bolt Lubrication

Lubrication will affect required torque of clean fasteners in good condition more than any other factor. In fact, 90% of applied torque goes to overcome friction while only 10% actually stretches the bolt. Table 4 assumes that only machine oil is used as a lubricant. Table 5 shows a list of several common lubricants and their effect on torque required to stretch bolts to 50% of their yield strength. Most are available from local bearing distributors.

Never-Seez® is a mark owned by Bostik, Inc.  
Molykote® G-n is a mark owned by Dow Corning Corporation.

# EN-DFA Series

## Recommended Spare Parts

The crimp openings in Enardo detonation flame arrestors are relatively large and are therefore quite easy to clean. Plugging will normally be limited to the flame cell and screen that are installed at the inlet side of the arrestor's element assembly. If plugging should occur, the plugged flame cell(s) and screen(s) can be cleaned as detailed above, reinstalled and used again, provided there is no damage and not plugged to an extent that cleaning is not effective. For installations with dirty process conditions where frequent maintenance is necessary, it is recommended that the user purchase a spare element assembly and several spare element gaskets. The spare element assembly can be installed immediately and the dirty assembly can then be cleaned and be stored as a spare for the next maintenance interval.

## NOTE

**Element gaskets must be replaced each time the cell assembly is loosened and removed. Gasket must be made from high temperature graphite material. It is recommended that replacement gaskets be ordered from Enardo.**

## Parts Ordering

When corresponding with your local Sales Office about this equipment, always reference the equipment serial number stamped on the nameplate.

When ordering replacement parts, specify the complete 7-character part number of each required part as found in the following parts list.

## Parts List

**Table 6. Replacement Element Assembly Part Numbers<sup>(1)</sup> (Group IIA Models)**

Housing	PART NUMBER			
	Carbon Steel	304 Stainless Steel	Carbon Steel	316 Stainless Steel
<b>Flame Cells</b>	<b>304 Stainless Steel</b>	<b>304 Stainless Steel</b>	<b>316 Stainless Steel</b>	<b>316 Stainless Steel</b>
EN-DFA-402 Model	9124101	9130101	9130001	9130201
EN-DFA-603 Model	9124102	9130102	9130002	9130202
EN-DFA-804 Model	9124103	9130103	9130003	9130203
EN-DFA-1206 Model	9124104	9130104	9130004	9130204
EN-DFA-1608 Model	9124105	9130105	9130005	9130205
EN-DFA-2010 Model	9124106	9130106	9130006	9130206
EN-DFA-2412 Model	9124107	9130107	9130007	9130207

1. Includes housings and all internal parts.

**Table 7. Replacement Flame Cells and Screens Part Numbers<sup>(1)</sup> (Group IIA Models)**

MODEL	FLAME CELLS (2 Inches / 51 mm WIDE)			SCREENS (MATCH MATERIAL WITH FLAME CELLS)		
	Quantity Used	Part Number		Quantity Used	Part Number	
		304 Stainless Steel	316 Stainless Steel		304 Stainless Steel	316 Stainless Steel
EN-DFA-402	4	9124401	9132001	3	9124001	9129801
EN-DFA-603	4	9124402	9132002	3	9124002	9129802
EN-DFA-804	4	9124403	9132003	3	9124003	9129803
EN-DFA-1206	4	9124404	9132004	3	9124004	9129804
EN-DFA-1608	4	9124405	9132005	3	9124005	9129805
EN-DFA-2010	4	9124406	9132006	3	9124006	9129806
EN-DFA-2412	4	9124407	9132007	3	9124007	9129807

1. Included in element assembly.

**Table 8. Replacement Element Assembly Part Numbers<sup>(1)</sup> (Group IIB3 Models)**

Housing	PART NUMBER			
	Carbon Steel	304 Stainless Steel	Carbon Steel	316 Stainless Steel
<b>Flame Cells</b>	<b>304 Stainless Steel</b>	<b>304 Stainless Steel</b>	<b>316 Stainless Steel</b>	<b>316 Stainless Steel</b>
EN-DFA-402 Model	9123501	9130501	9130401	9130601
EN-DFA-603 Model	9123502	9130502	9130402	9130602
EN-DFA-804 Model	9123503	9130503	9130403	9130603
EN-DFA-1206 Model	9123504	9130504	9130404	9130604
EN-DFA-1608 Model	9123505	9130505	9130405	9130605
EN-DFA-2010 Model	9123506	9130506	9130406	9130606
EN-DFA-2412 Model	9123507	9130507	9130407	9130607

1. Includes housings and all internal parts.

**Table 9. Replacement Flame Cells and Screens Part Numbers<sup>(1)</sup> (Group IIB3 Models)**

MODEL	FLAME CELLS OUTBOARD CELLS ARE 2 Inches / 50 mm THICK INBOARD CELLS ARE 1 Inch / 25 mm THICK					SCREENS (MATCH MATERIAL WITH FLAME CELLS)		
	Thickness		Quantity Used	Part Number		Quantity Used	Part Number	
	Inch	mm		304 Stainless Steel	316 Stainless Steel		304 Stainless Steel	316 Stainless Steel
EN-DFA-402	2	50	2	9123301	9132201	3	9124001	9129801
	1	25	2	9123401	9132401			
EN-DFA-603	2	50	2	9123302	9132202	3	9124002	9129802
	1	25	2	9123402	9132402			
EN-DFA-804	2	50	2	9123303	9132203	3	9124003	9129803
	1	25	2	9123403	9132403			
EN-DFA-1206	2	50	2	9123304	9132204	3	9124004	9129804
	1	25	2	9123404	9132404			
EN-DFA-1608	2	50	2	9123305	9132205	3	9124005	9129805
	1	25	2	9123405	9132405			
EN-DFA-2010	2	50	2	9123306	9132206	3	9124006	9129806
	1	25	2	9123406	9132406			
EN-DFA-2412	2	50	2	9123307	9132207	3	9124007	9129807
	1	25	2	9123407	9132407			

1. Included in element assembly.

# EN-DFA Series

**Table 10. Temperature Sensor Assemblies Part numbers<sup>(1)</sup> (Group IIA and IIB3 Models)**

MODEL	PART NUMBER	THERMOWELL LENGTH	
		Inch	mm
EN-DFA-402	9134001	3.5	88
EN-DFA-603	9134001	3.5	88
EN-DFA-804	9134001	3.5	88
EN-DFA-1206	9134002	6	150
EN-DFA-1608	9134002	6	150
EN-DFA-2010	9134003	8	200
EN-DFA-2412	9134003	8	200

1. Temperature sensor assemblies (for IIA and IIB3 models) consist of Type K thermocouple probe, explosion-proof head and thermowell, 316 Stainless steel.

**Table 11. Replacement Gasket Part Numbers<sup>(1)</sup> (Group IIA and IIB3 Models)**

MODEL	PART NUMBER
EN-DFA-402	9121401
EN-DFA-603	9121402
EN-DFA-804	9121403
EN-DFA-1206	9121404
EN-DFA-1608	9121405
EN-DFA-2010	9121406
EN-DFA-2412	9121407

1. Two (2) required per assembly.

North America Only

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