Diesel Engine Exhaust Spark Arrestors

Models SSE, SSL, and SSN

Overview

Chalwyn Spark Arrestors help mitigate the risk of fire from the ignition of flammable materials caused by spark emission from diesel engine exhaust. They are a basic but key safety feature for both hazardous area and lower risk diesel engine applications such as forestry or agriculture where a stray spark may cause ignition of combustible material.

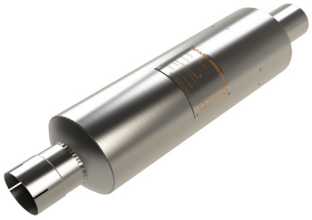
Virtually all legislation with regard to operating a diesel engine in a hazardous area includes a mandatory requirement to fit a properly tested and approved exhaust spark arrestor.

Secondary - SSE
4 kW (5 hp) - 123 kW (165 hp)

Primary - SSL
8 kW (10 hp) - 559 kW (750hp)

Typical Applications

- Where spark emission from a diesel engine exhaust could lead to the ignition of flammable material
- Offshore platforms and drilling rigs
- Refinery vehicles and equipment
- Forklift trucks in defined hazardous areas



Latest Generation, Stage 4 - SSN
10 kW (13 hp) - 750 kW (1005 hp)

Features and Benefits

- EN 1834 certified for safe use in potentially explosive atmospheres
- Utilized globally in the oil and gas industry
- Constructed from stainless steel (14404/316) for corrosion resistance and longevity
- Wide range available-up to 750 kW (1005 hp)
- Meets engine manufacturers' published back pressure specification providing emission conformance, good noise attenuation (SSL), and exceptional spark-arresting abilities
- SSN specially designed to meet the requirements of the latest generation of low emission diesel engines

Latest Generation, Stage 4 - SSN
(Cutaway)

Operating Principle

Chalwyn spark arrestors are the quenching type as defined in BS EN 1834-1:2000 clause 5.10.2. In this cyclonic design the glowing particles emitted from a diesel engine exhaust are spun and repeatedly impacted against internal spark arrestor surfaces. This cools them and breaks them down before eventual safe discharge to atmosphere.

Approvals

Spark arrestor types SSL and SSE have been type tested and meet the spark arresting performance specified for diesel engine exhaust spark arrestors for use in zone 1 and zone 2 hazardous areas as defined by the ATEX Directive. Types SSL and SSE are marked:

 GD

Important Note: In order to fully comply with the requirements of the ATEX Directive, the installer/ user shall ensure that the spark arrestor is suitable for its intended purpose (undertake a spark test if necessary) and shall be included in the temperature assessment of the completed engine prior to commissioning, in accordance with the following stanards appropriate to the particular application.

EN 1834 - 1 : 2000 clause 5.3
EN 1834 - 2 : 2000 clause 5.2
EN 1834 - 3 : 2000 clause 5.1

Product Range

Type SSE

- Compact spark arrestors designed for 'end of line' permanent or temporary installation
- ATEX approved for Zones 1 and 2 hazardous area applications (see IMPORTANT NOTE under Approvals above)
- Sizes to suit engine ratings from 4 kw (5hp) to 123 kw (165 hp)
- Manufactured in 316 grade stainless steel
- Can be mounted vertically or horizontally
- Slotted inlet and outlet pipe for clamping to exhaust pipe (plain outlet pipe with OD same as inlet pipe ID)
- Many standard sizes available from stock
- Single fixing clamp supplied

Type SSL

- Combined spark arrestor/industrial standard silencers designed for permanent installation
- ATEX approved for Zones 1 and 2 hazardous area applications (see IMPORTANT NOTE under Approvals above)
- Sizes to suit engine ratings from 8 kw (10hp) to 559 kw (750hp)
- Manufactured in 316 grade stainless steel
- Can be mounted vertically or horizontally
- Slotted inlet and outlet pipe for clamping
- Many standard sizes available from stock

Type SSN

- Combined spark arrestor/industrial standard silencers designed for permanent installation
- ATEX approved for Zones 1 and 2 hazardous area applications (See IMPORTANT NOTE under Approvals above)
- Sizes to suit engine ratings from 10 kw (13hp) to 750 kw (1005hp)
- Manufactured in 316 grade stainless steel
- Can be mounted vertically or horizontally
- Slotted inlet and outlet pipe for clamping
- Designed to meet the requirements of the latest generation of low emission diesel engines
- Suitable for all modern turbo charged engines

Installation

Fit the spark arrestor into the diesel engine exhaust pipe at any convenient position. Guard as necessary to avoid any hazard arising from contact with the hot surface.

Ensure correct gas flow direction as indicated by the arrow on the spark arrestor.

Provide adequate support for the spark arrestor and associated exhaust pipe-work. Support brackets up to 360mm (14”) diameter are available from Chalwyn. Use flexible sections where required to avoid excessive stresses.

IMPORTANT: Early mechanical failure will occur if the spark arrestor is not supported and installed correctly. SSL and SSN ranges must always be supported at both ends. SSE can be mounted vertically using only the inlet pipe clamp if required.

Use a proprietary exhaust gas sealant as necessary to make certain all joints in the exhaust system are gas tight.

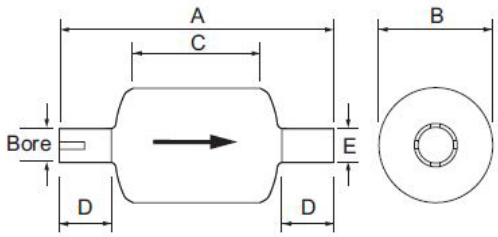
Check that under the full range of operating conditions the spark arrestor surface temperature does not exceed any maximum specified for the application.

Selection

The limiting engine ratings shown in the table for each spark arrestor type should not be exceeded. Where a diesel engine exhaust system also includes other features with significant flow restriction (e.g., flame traps, restrictive silencers, etc.), or the engine manufacturer specifies an unusually low back pressure limit, or where specific noise reduction levels are specified, the installer/user must ensure the spark arrestor meets all requirements of the intended application. If in doubt please check with your local Chalwyn Sales Office (see page 8).

Note that when selecting a “clamp on” pipe arrangement, the tabulated data relates to the internal bore of the spark arrestor pipe stubs.

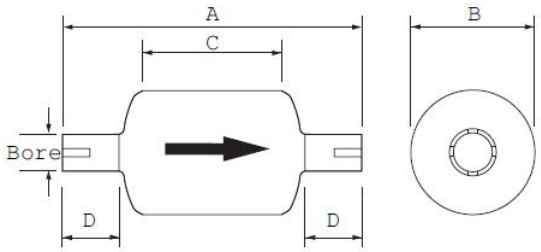
Type SSE



Product Code	Pipe Bore		Engine Power Range		A	B	C	D	Approximate Weight	
	mm	in	kW	hp	mm	mm	mm	mm	kg	lb
SSE0191D	31.8	1¼	4-19	5-25	353	92	135	85	1.6	3.5
SSE0191E	34.9	1⅜								
SSE0191F	38.1	1½								
SSE0191H	44.5	1¾								
SSE0261F	38.1	1½	11-26	15-35	369	127	145	80	2.5	5.5
SSE0261H	44.5	1¾								
SSE0262A	50.8	2								
SSE0381H	44.5	1¾	15-37	20-50	393	152	165	85	3	6.6
SSE0382A	50.8	2								
SSE0382D	57.2	2¼								
SSE0382F	63.5	2½								
SSE0532A	50.8	2	22-52	30-70	434	177	200	85	4	8.8
SSE0532D	57.2	2¼								
SSE0532F	63.5	2½								
SSE0682A	50.8	2	30-67	40-90	450	202	205	95	5	11
SSE0682F	63.5	2½								
SSE0682H	69.9	2¾								
SSE0683A	76.2	3								
SSE0982F	63.5	2½	52-97	70-130	487	233	235	70	5	11
SSE0983A	76.2	3								
SSE0983F	88.9	3½								
SSE1243F	88.9	3½	67-123	90-165	550	305	300	75	9	19.8
SSE1244A	101.6	4								

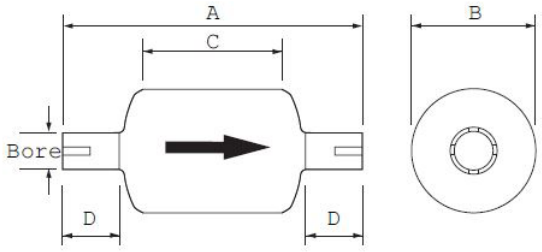
Note: Outlet diameter E matches the inlet diameter shown on the table above.

Type SSL



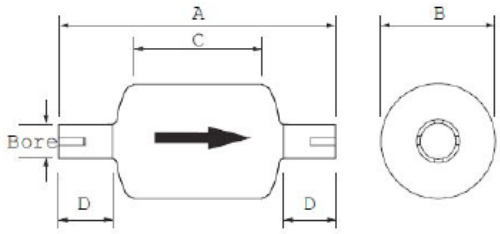
Product Code	Pipe Bore		Engine Power Range		A	B	C	D	Approximate Weight	
	mm	in	kW	hp	mm	mm	mm	mm	kg	lb
SSL0341D	31.8	1¼	8-34	10-45	490	92	305	65	2	4.4
SSL0341E	34.9	1⅜								
SSL0341F	38.1	1½								
SSL0341G	41.2	1⅝								
SSL0341H	44.5	1¾								
SSL0341J	48.0	1⅞								
SSL0342A	50.8	2								
SSL0601H	44.4	1¾	19-60	25-80	465	152	275	65	3	6.6
SSL0601J	48.0	1⅞								
SSL0602A	50.8	2								
SSL0602C	55.0	2 3/16								
SSL0602D	57.2	2¼								
SSL0602E	60.3	2⅜								
SSL0602F	63.5	2½								
SSL0602H	69.9	2¾								
SSL0651F	38.1	1½	22-60	30-80	680	127	500	65	4	8.8
SSL0652A	50.8	2								
SSL0652F	63.5	2½								
SSL0902A	50.8	2	37-90	50-120	885	152	665	90	6	13.2
SSL0902D	57.4	2¼								
SSL0902E	60.3	2⅜								
SSL0902F	63.5	2½								
SSL0902H	69.9	2¾								
SSL0903A	76.2	3								
SSL09X2A	50.8	2	37-90	50-120	728	152	507	90	5.5	12.1
SSL09X2C	55.0	2 3/16								
SSL09X2D	57.4	2¼								
SSL09X2E	60.3	2⅜								
SSL09X2F	63.5	2½								
SSL09X2H	69.9	2¾								
SSL09X3A	76.2	3								
SSL1503A	76.2	3	71-149	95-200	971	178	750	65	8	17.6
SSL1503F	88.9	3½								
SSL1504A	101.6	4								
SSL15X3A	76.2	3	71-149	95-200	865	178	645	65	7.5	16.5
SSL15X3F	88.9	3½								
SSL15X4A	101.6	4								

Type SSL continued



Product Code	Pipe Bore		Engine Power Range		A	B	C	D	Approximate Weight	
	mm	in	kW	hp	mm	mm	mm	mm	kg	lb
SSL2264A	101.6	4	112-225	150-300	1000	202	760	90	10.8	17
SSL2264F	114.3	4½								
SSL2264H	120.6	4¾								
SSL2265A	127	5								
SSL2554A	101.6	4	112-254	150-340	1145	202	910	90	11	24
SSL2554F	114.3	4½								
SSL2554H	120.6	4¾								
SSL2555A	127	5								
SSL3134A	101.6	4	186-313	250-402	1195	234	960	85	14.7	33
SSL3134E	110	4⅜								
SSL3134F	114.3	4½								
SSL3135F	127	5								
SSL3135H	139.7	5½								
SSL3136A	152.4	6								
SSL3384A	101.6	4	186-336	250-450	1335	234	1110	85	15	33
SSL3384E	110.0	4⅜								
SSL3384F	114.3	4½								
SSL3385A	127.0	5								
SSL3385H	139.7	5½								
SSL3386A	152.4	6								
SSL4135A	127.0	5	242-410	325-550	1490	305	1250	70	26	57.2
SSL4135F	139.7	5½								
SSL4136A	152.4	6								
SSL4136F	165.1	6½								
SSL4137A	177.8	7								
SSL5636A	152.4	6	354-559	475-750	1758	357	1500	70	47	103.4
SSL5636F	165.1	6½								
SSL5637A	177.8	7								
SSL5637F	190.5	7½								
SSL5638A	203.2	8								

Type SSN



Product Code	Pipe Bore		Engine Power Range		A	B	C	D	Approximate Weight	
	mm	in	kW	hp	mm	mm	mm	mm	kg	lb
SSN0321F	38	1½	10-32	13-43	455	92	270	92	1.75	4
SSN0321H	45	1¾								
SSN0402A	51	2	23 - 40	30-54	545	125	365	90	3.2	7
SSN0402C	55	2 3/16								
SSN0402D	57	2¼								
SSN0802A	51	2	30 -80	40-107	658	150	440	90	4.5	9
SSN0802C	55	2 3/16								
SSN0802D	57	2¼								
SSN0802E	60	2⅜								
SSN0802F	64	2½								
SSN0802H	70	2¾								
SSN0803A	76	3								
SSN1303A	76	3	55 - 130	74-174	696	175	475	110	5.7	12.5
SSN1303F	89	3½								
SSN1304A	102	4								
SSN1803F	89	3½	75 - 180	100-241	885	205	650	117	8.7	19
SSN1804A	102	4								
SSN1804F	114	4½								
SSN2104A	102	4	100 -210	134-281	1020	235	795	113	11.8	26
SSN2104F	114	4½								
SSN2105A	127	5								
SSN3105A	127	5	145 - 310	194-415	1157	270	930	113	13.8	30
SSN3105F	145	5½								
SSN3106A	152	6								
SSN3755A	127	5	150 - 375	200-503	1270	300	1030	90	15.5	34
SSN3755F	140	5½								
SSN3756A	152	6								
SSN3756F	165	6½								
SSN5206A	152	6	240 - 520	322-697	1533	360	1275	90	18.4	40
SSN5206F	165	6½								
SSN5207A	178	7								
SSN5208A	203	8								
SSN7508A	203	8	400 - 750	536-1005	1760	500	1580	90	20.6	45
SSN75010A	254	10								

Maintenance

Daily: Examine the spark arrestor for any sign of gas leakage, cracks or significant areas of damage, ie dents of more than a few millimetres in depth.

Three monthly (or 1000 hours operation, whichever is sooner): Remove spark arrestor. Tap with a soft mallet to loosen any internal deposits and shake out. Also by shaking check for any loose internal baffles.

Six monthly (or 1500 hours operation, whichever is sooner): Examine the exhaust discharge in darkness whilst repeatedly loading and accelerating the engine. If any sparks are observed, the spark arrestor is not suitable for further use. Note: ensure adequate ventilation if this check is carried out in an enclosed area.

Note: The engine must not be put back into service until any problems identified by the above checks are rectified.

Accessories

UBC body support brackets are available for most SSE and SSL models. Please contact Chalwyn for model nmbers.

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