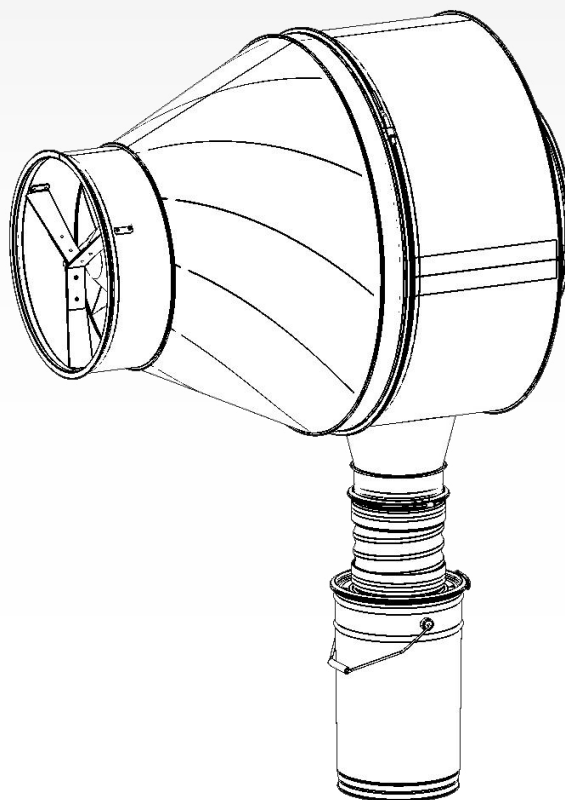


Cyclonic spark arrester

SPARKSHIELD



EN

Installation and user manual

TABLE OF CONTENTS

PREFACE.....	2
1 INTRODUCTION.....	2
2 PRODUCT DESCRIPTION	3
3 SAFETY	3
4 INSTALLATION	4
5 MAINTENANCE	6
6 SPARE PARTS	7
7 DISPOSAL.....	7

EN | ORIGINAL INSTRUCTION

All rights reserved. The information given in this document has been collected for the general convenience of our clients. It has been based on general data pertaining to construction material properties and working methods known to us at the time of issue of the document and is therefore subject at any time to change or amendment and the right to change or amend is hereby expressly reserved. The instructions in this publication only serve as a guideline for installation, use, maintenance and repair of the product mentioned on the cover page of this document. This publication is to be used for the standard model of the product of the type given on the cover page. Thus the manufacturer cannot be held responsible for any damage resulting from the application of this publication to the version actually delivered to you. This publication has been written with great care. However, the manufacturer cannot be held responsible, either for any errors occurring in this publication or for their consequences.

To improve comprehension for people whose first language is not English, we have written parts of this manual in Simplified Technical English (STE). STE is a controlled language originally developed for aerospace industry maintenance manuals. It offers a carefully limited and standardized subset of English, along with specific writing rules.








PREFACE

Using this manual

This manual is intended to be used as a work of reference for professional, well trained and authorised users to be able to safely install, use, maintain and repair the product mentioned on the cover of this document.

Pictograms and symbols

The following pictograms and symbols are used in this manual:

	TIP Suggestions and recommendations to simplify carrying out tasks and actions.
	ATTENTION A remark with additional information for the user. A remark brings possible problems to the user's attention.
	CAUTION! Procedures, if not carried out with the necessary caution, could damage the product, the workshop or the environment.
	WARNING! Procedures which, if not carried out with the necessary caution, may damage the product or cause serious personal injury.
	WARNING! Fire hazard! Important warning to prevent fire.
	Personal protective equipment (PPE) Instruction to use respiratory protection when you do service, maintenance and repair jobs. We recommend to use a half-face respirator according to EN 149:2001 + A1:2009, classe FFP3 (Directive 89/686/EEC).
	Personal protective equipment (PPE) Instruction to use protective gloves when you do service, maintenance and repair jobs.

Text indicators

Listings indicated by "-" (hyphen) concern enumerations. Listings indicated by "•" (bullet point) describe steps to perform.


Service and technical support

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact the supplier of the product. He will always be willing to help you.

1 INTRODUCTION

1.1 General description

The SparkShield is a cyclonic spark arrester that is highly effective on sparks and cigarette butts. Besides, it is a very effective in-line pre separator to reduce dust load in the connected filter system.

	For an effective removal of cigarette butts, we recommend a duct velocity of min. 11 m/s.
--	---

1.2 Product combinations

The SparkShield is part of Plymovent's SHIELD fire safety solutions for prevention, detection and suppression of fire.



You can also use the SparkShield as separate spark arrester in the extraction duct of central filter systems.



Refer to the available application data sheet for possible product combinations.

1.3 Options and accessories

The following products are available as an option and/or accessory:

General:	
Inspection hatch IH-200/8	Ø 200 mm / 8 in.
Shut-off valve:	
- MD-200	Ø 200 mm
- MD-8	Ø 8 in.
- EFC	Industrial detergent
SparkShield-250 10:	
- Inspection hatch IH-250/10 (2x)	Ø 250 mm/10 in.
SparkShield-400 16:	
- Inspection hatch IH-400/16 (2x)	Ø 400 mm/16 in.
SparkShield-500 20:	
- Inspection hatch IH-500/20 (2x)	Ø 500 mm/20 in.
SparkShield-630 24:	
- Inspection hatch IH-630/24 (2x)	Ø 630 mm/24 in.

1.4 Technical specifications



Material:	
- housing (inlet + outlet)	powder-coated steel
- cyclone SparkTwist	galvanized steel
- dustbin	tin
- hose	spark resistant glassfibre/kevlar/metal
Weight (excl. dustbin):	
- SparkShield-250 10	25 kg (55 lbs.)
- SparkShield-400 16	46 kg (101 lbs.)
- SparkShield-500 20	52 kg (115 lbs.)
- SparkShield-630 24	118 kg (260 lbs.)
Volume of dustbin	13 litres (± ½ CF)
	25 litres (± ¾ CF)

1.5 Dimensions

Refer to Fig. I on page 8.



1.6 Pressure drop

Refer to Fig. II on page 9.

1.7 Working range

Refer to Fig. II on page 9.



Refer to the available product data sheet for detailed product specifications.

2 PRODUCT DESCRIPTION

2.1 Components

The product consists of the following main components and elements:

Fig. 2.1

- A Inlet
- B Cyclone SparkTwist
- C Duct clamp
- D Outlet
- E Dustbin cover incl. connection flange + hose
- F Dustbin

Additionally for SparkShield-630 | 24:

- G Lifting bracket
- H Inspection & service hatch (2)

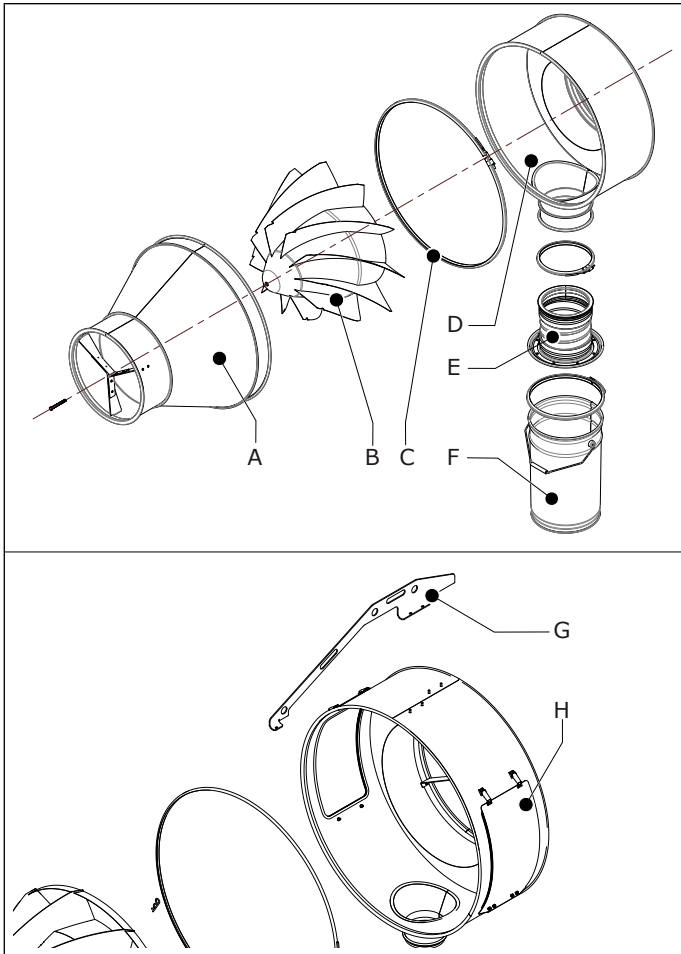
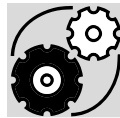


Fig. 2.1 Main components

2.2 Operation

The SparkShield consists of a horizontally mounted in-line spark arrester with dustbin underneath. Due to their weight, sparks and other debris are separated from the airflow by the cyclonic SparkTwist and end up in the dustbin.



2.3 Options and accessories

2.3.1 Inspection hatches (recommended option)

The use of inspection hatches in the horizontal and vertical duct (if any) allow visual spark arrester and duct inspection.

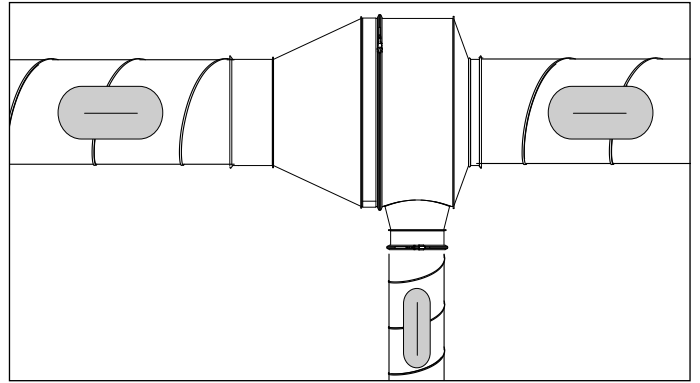


Fig. 2.2 Inspection hatches

2.3.2 Shut-off valve (MD-200)

You can use a valve to shut off the vertical duct (if any) during dustbin exchange.

Fig. 2.3

- A Shut-off valve **open**
- B Shut-off valve **closed**

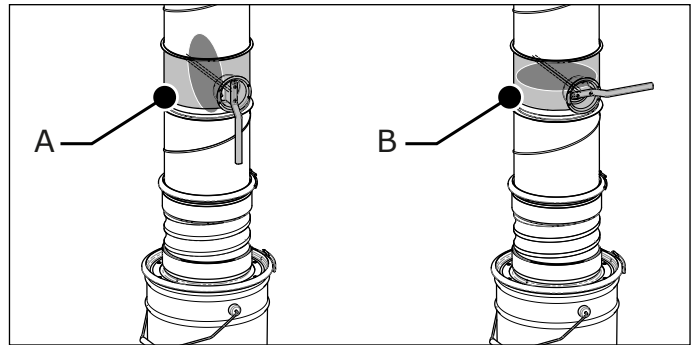


Fig. 2.3 Shut-off valve (open + closed)

3 SAFETY

Intended use¹

The product has been designed for removal of sparks from metal and grinding processes. Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognised safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.



Installation

- The installation of this product is exclusively reserved to well authorised, trained and qualified engineers.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).
- Do not install the product in front of entrances and exits that must be used for emergency services.

1. "Intended use" as explained in EN-ISO 12100-1 is the use for which the technical product is suited as specified by the manufacturer, inclusive of his directions in the sales brochure. In case of doubt it is the use which can be deduced from the construction, the model and the function of the technical product which is considered normal use. Operating the machine within the limits of its intended use also involves observing the instructions in the user manual.

- Make sure the wall, ceiling or support system are strong enough to carry the product.

Service, maintenance and repairs

- Obey the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- Always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).

	Personal protective equipment (PPE) Wear respiratory protection and protective gloves during service, maintenance and repairs.
--	--

4 INSTALLATION

4.1 Tools and requirements

You need the following materials to install the product:



	Duct >1 m Ø 200 mm/8 inch (recommended)
	Lifting and climbing gear; e.g. - straps - fork-lift truck + pallet - scissor lift
	Box spanner: - SparkShield-250/10: M10 + M13 - SparkShield-400/16: M10 + M13 - SparkShield-500/20: M10 + M13 + M16 - SparkShield-630/24: M10 + M13 + M16
	Duct support material
	Electric drill + self-tapping screws
	Existing duct: - angle grinder; or - jigsaw + electric drill

4.2 Unpacking

Make sure that the product is complete. The package contains:



SparkShield-250 | 400 | 500 | 630:

- spark arrester, consisting of inlet with SparkTwist and outlet, connected by duct clamp
- dustbin 13 litres
- dustbin 25 litres
- dustbin cover incl. connection flange + hose

For duct connection of the spark arrester:

- connection ring (2) Ø 250/400/500/630 mm
- duct clamp (2) Ø 250/400/500/630 mm

For connection of vertical duct Ø 200 mm (recommended) between the spark arrester and the dustbin:

- connection ring (2) Ø 200 mm
- duct clamp Ø 200 mm

SparkShield-10 | 16 | 20 | 24:

- spark arrester, consisting of inlet with SparkTwist and outlet, connected by duct clamp
- dustbin 13 litres (± ½ CF)
- dustbin 25 litres (± ⅞ CF)
- dustbin cover incl. connection flange + hose

For duct connection of the spark arrester:

- reducer (2) from metric Ø 250/400/500/630 mm to imperial Ø 10/16/20/24 in.
- duct clamp (2) Ø 250/400/500/630 mm

For connection of vertical duct Ø 8 in. (recommended) between the spark arrester and the dustbin:

- reducer (2) from metric Ø 200 mm to imperial Ø 8 in.
- duct clamp Ø 200 mm

If parts are missing or damaged, contact your supplier.

4.3 Mounting



4.3.1 Spark arrester

You can mount the spark arrester:

- during installation of new ductwork
- afterwards in an existing duct²

	ATTENTION Allow sufficient space between the duct and the wall to install the spark arrester.
	You can install the spark arrester as a whole. Lift it with (e.g.): - straps - a forklift-truck with pallet
	SparkShield-250 400 500 10 16 20: When no lifting gear is available, we recommend to install the inlet and outlet separately and to reconnect them afterwards.
	SparkShield-630 24: You must install the spark arrester as a whole. It is provided with a lifting bracket to facilitate various lifting techniques.

To install the spark arrester, do the following.

	ATTENTION Obey the mounting instructions as indicated in: - Fig. III (airflow direction) and - Fig. IV (duct installation) on page 5
--	--

- In case of installation in an existing duct: cut away a piece of the existing duct. Refer to Fig. V on page 10 (D) for the duct length to be removed.
- Support the loose ends of the duct.

	WARNING Duct supports must be able to carry the weight of the spark arrester. Refer to paragraph 1.4 for the weight of the spark arrester in question.
--	--

Fig. 4.1

- Extend all duct clamps.
- Slide a duct clamp Ø 250/400/500/630 mm over both duct ends.
- **Duct metric size (mm):**
Place a connection ring Ø 250/400/500/630 mm (A) in

2. The installation of any product(s) not included in the initial design of an extraction system could add additional static pressure to the overall system design. By doing so, the result may be a reduction of airflow at the extraction point.

both duct ends and fasten them with self-tapping screws (min. 6).

- **Duct imperial size (inch):**
Place a reducer metric-imperial Ø 10/16/20/24 (A) in both duct ends and fasten them with self-tapping screws (min. 6).
- Lift the spark arrester (C) in line with the duct and mount it to the connection rings with the duct clamps (B). Tighten the clamps with a box spanner.

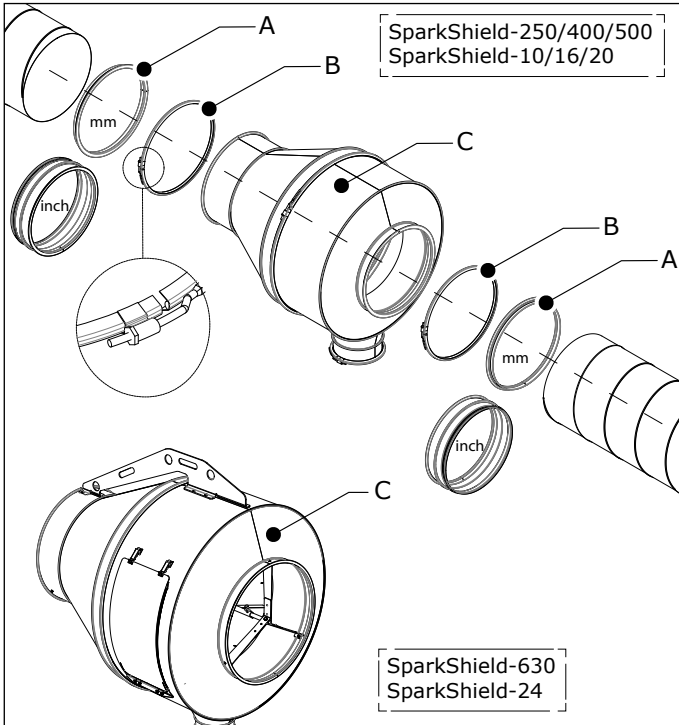


Fig. 4.1 Mounting of the spark arrester

4.3.2 Dustbin

The SparkShield comes with two different dustbins. You can install the preferred one.

Recommended use:

- SparkShield-250 | 400 | 10 | 16: dustbin 13 litres
- SparkShield-400 | 500 | 630 | 16 | 20 | 24: dustbin 25 litres

You can place the dustbin on the floor or on a frame or small platform. It is recommended to enlarge the distance between the spark arrester and the dustbin by a duct Ø 200 mm/8 in.

	Although it is possible to install the dustbin directly to the spark arrester, the installation of a vertical duct of >1 metre between the spark arrester and the dustbin enhances fire safety. The larger the distance to the dustbin, the safer.
	For weight reasons we recommend to place the dustbin on a small pallet to facilitate removal.

To install the dustbin, do the following.

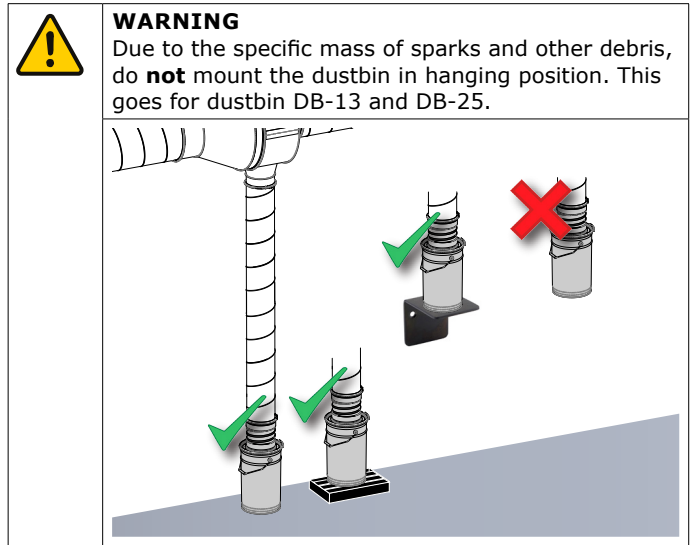


Fig. 4.2

- Put the dustbin cover (B) on the dustbin of your choice and connect it with the quick connect coupling (C).

Direct mounting to the spark arrester:

- Place the dustbin underneath the spark arrester.
- Connect it to the spark arrester with the duct clamp (A). Tighten the clamp with a box spanner.

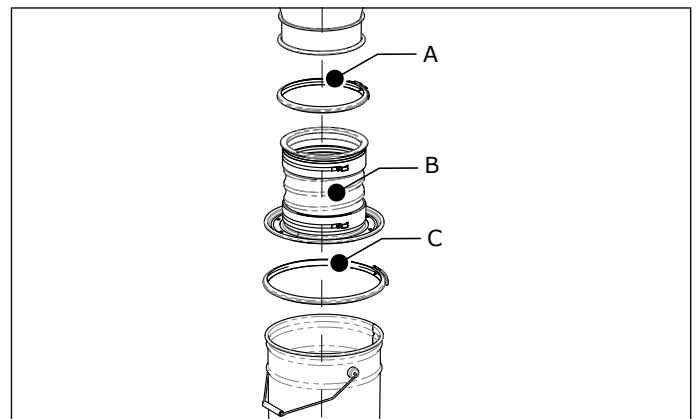


Fig. 4.2 Mounting of the dustbin

In this case the following parts become redundant:

- connection ring (2) Ø 200 mm/8 inch
- duct clamp Ø 200 mm

Mounting via vertical duct Ø 200 mm/8 inch:

Fig. 4.3

- **Duct metric size (mm):**
Put a connection ring Ø 200 mm (B) at either side of the duct and fasten them with self-tapping screws (min. 4).
- **Duct imperial size (inch):**
Put a reducer metric-imperial (B) at either side of the duct and fasten them with self-tapping screws (min. 4).
- Connect the duct to the spark arrester with a duct clamp (A). Tighten the clamp with a box spanner.
- Place the dustbin underneath the duct.
- Connect it to the duct with the duct clamp (C). Tighten the clamp with a box spanner.

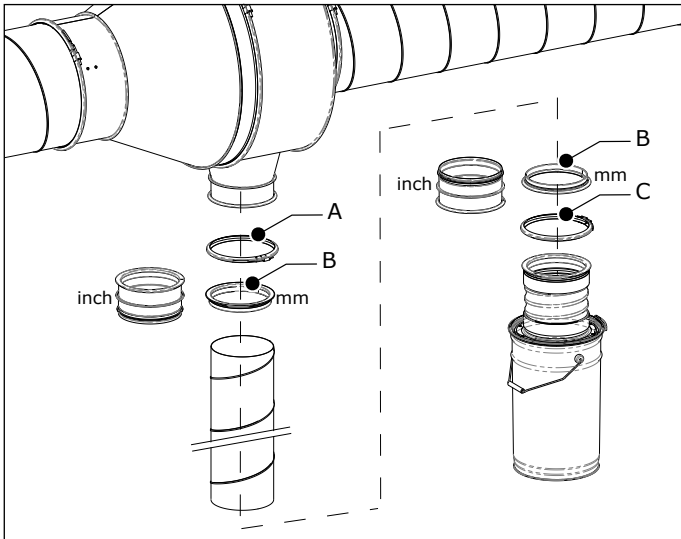


Fig. 4.3 Mounting of the dustbin via a vertical duct

4.4 Inspection hatches (recommended option)

Refer to Fig. V on page 10 for the recommended position of the inspection hatches.

- Make cut outs in the horizontal and/or vertical duct with the mould supplied with the inspection hatches.
- Insert the hatches in the cut outs.
- Turn the handles 90° to fasten them and make the ducts airtight.



Refer to the mounting instruction supplied with the inspection hatches.

4.5 Shut-off valve (option)

You can install the shut-off valve in any appropriate position in the vertical duct.

- Install the valve in accordance with the instruction sheet supplied with the valve.
- Turn the handle in vertical position to open the valve.

5 MAINTENANCE

5.1 Periodic maintenance



The spark arrester as well as the dustbin require periodic maintenance. You must learn from experience how often this must take place, since the degree of pollution strongly depends on the welding process and the intensity of use.



Personal protective equipment (PPE)
Wear respiratory protection and protective gloves during maintenance,

Maintenance frequency in the initial stage:

Component	Action	Frequency: every X weeks	
		X=1	X=2
Spark arrester	Check for pollution. Clean if necessary; refer to paragraph 5.2		X

Component	Action	Frequency: every X weeks	
		X=1	X=2
Dustbin	Check the level of contents. Replace the dustbin if necessary; refer to paragraph 5.3	X	

5.2 Cleaning of spark arrester



ATTENTION

To avoid damage to the coating: do not use acid base detergent.

Use one of the following materials to clean the spark arrester:

- high-pressure cleaner with hot water
- industrial detergent type EFC (supplied by Plymovent)
- industrial vacuum cleaner
- brush
- cleaning cloth with degreasing solvent

To clean the spark arrester, do the following.

SparkShield-250 | 400 | 500 | 10 | 16 | 20:

- Support the spark arrester, preferably with straps.
- Demount the entire spark arrester by loosening the duct clamps at both sides and bring it down.
- Disassemble the spark arrester.
- Clean the SparkTwist and the inlet + outlet of the housing (inside).
- Assemble and install the spark arrester in reverse order.

SparkShield-630 | 24:

The spark arrester has a hatch for inspection and service purposes on each side of the housing.

Fig. 5.1

- Open the front hatch (A).

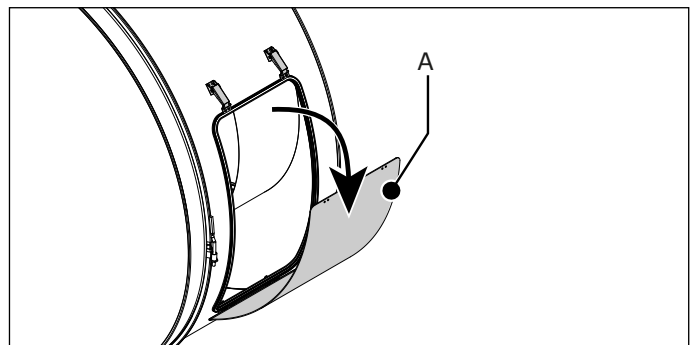


Fig. 5.1 Inspection and service hatch

Fig. 5.2

- Remove the cotter pin from the axle.

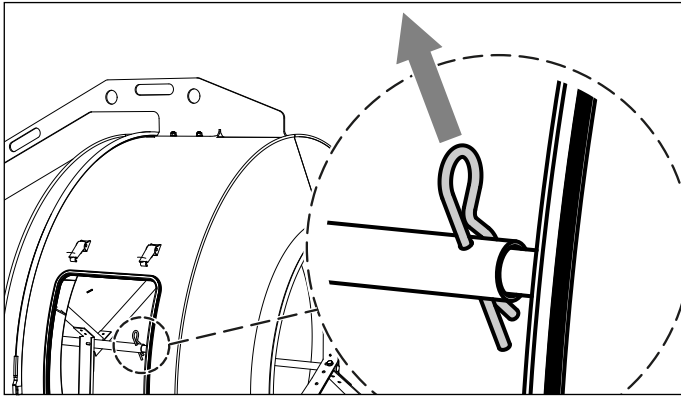


Fig. 5.2 Cotter pin

Fig. 5.3

- Move the SparkTwist (A) to the hatch.
- Turn the SparkTwist (B) sectionwise and clean it.

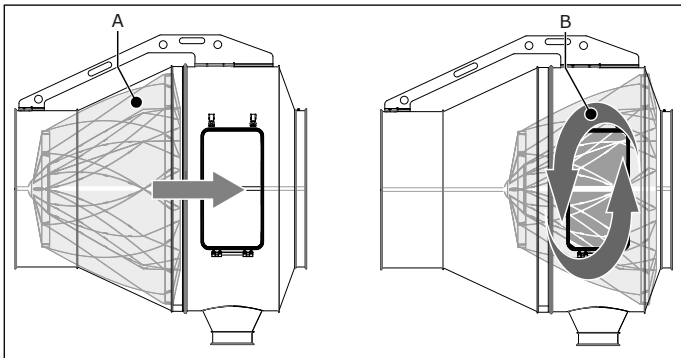
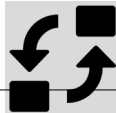


Fig. 5.3 Move + clean

- Move the SparkTwist back to the inlet.
- Attach it with the cotter pin.
- Close the hatch and fasten the draw latches.

5.3 Replacement of the dustbin



ATTENTION

The dustbins are disposable. To guarantee a dust-free procedure we recommend not to empty the dustbin but to dispose it of and to install a new one.

The dustbin cover is provided with a flexible hose to facilitate replacement of the dustbin.

To replace the dustbin, do the following.

- Turn off the connected extraction fan.

Without shut-off valve:

- Loosen the quick connect coupling (ref. Fig. 4.2C) and take the dustbin away.
- Close the dustbin with the lid supplied with the new dustbin.
- Install a new dustbin and connect it in reverse order.
- Turn on the extraction fan.
- Dispose of the used dustbin in accordance with state or local regulations.

With shut-off valve:

- Put the handle in horizontal position to close the shut-off valve (ref. Fig. 2.3B).

- Loosen the quick connect coupling (ref. Fig. 4.2C) and take the dustbin away.
- Close the dustbin with the lid that is supplied with the new dustbin.
- Place a new dustbin and connect it in reverse order.
- Put the handle in vertical position to open the shut-off valve (ref. Fig. 2.3A).
- Dispose of the used dustbin In accordance with state or local regulations.



WARNING

Make sure that the handle of the shut-off valve is in vertical position (=open) during use.

6 SPARE PARTS

The following spare parts are available for the filter unit;
- refer to exploded view Fig. VI on page 10



7 DISPOSAL

After life of the product, dispose of it in accordance with federal, state or local regulations.



Fig. I Dimensions

		SparkShield-							
		250	10	400	16	500	20	630	24
		mm	inch	mm	inch	mm	inch	mm	inch
A	∅	250	9 ⁷ / ₈	400	15 ³ / ₄	500	19 ⁵ / ₈	630	24 ³ / ₄
B	∅	514	20 ¹ / ₄	727	28 ⁵ / ₈	917	36 ¹ / ₈	1137	44 ³ / ₄
C		623	24 ¹ / ₂	875	34 ¹ / ₂	1095	43 ¹ / ₈	1321	52
D		793	31 ¹ / ₄	955	37 ⁵ / ₈	1176	46 ¹ / ₄	1416	55 ³ / ₄
E		444	17 ¹ / ₂	569	22 ³ / ₈	668	26 ¹ / ₄	783	30 ⁷ / ₈
F		256	10 ¹ / ₈	288	11 ³ / ₈	387	15 ¹ / ₄	488	19 ¹ / ₄
G	∅	200	7 ⁷ / ₈	200	7 ⁷ / ₈	200	7 ⁷ / ₈	200	7 ⁷ / ₈
H	min.	825	32	970	38	1095	43	1200	47
I	min.	1050	41	1200	47	1325	52	1420	56

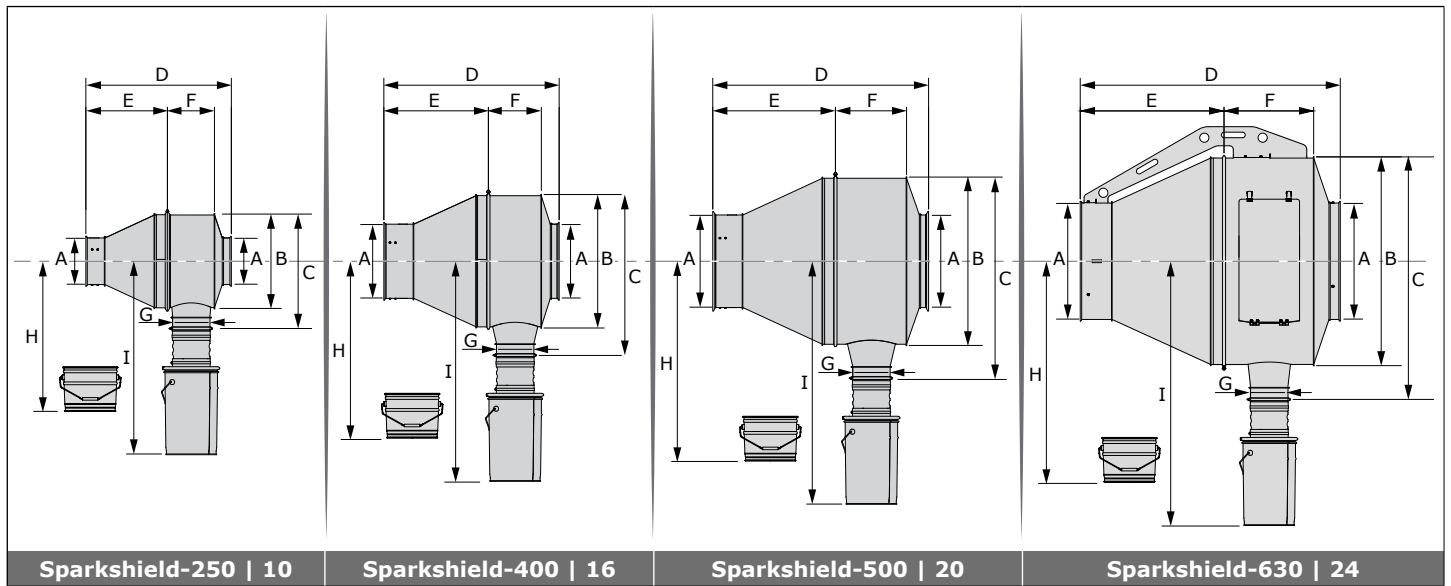


Fig. II Pressure drop

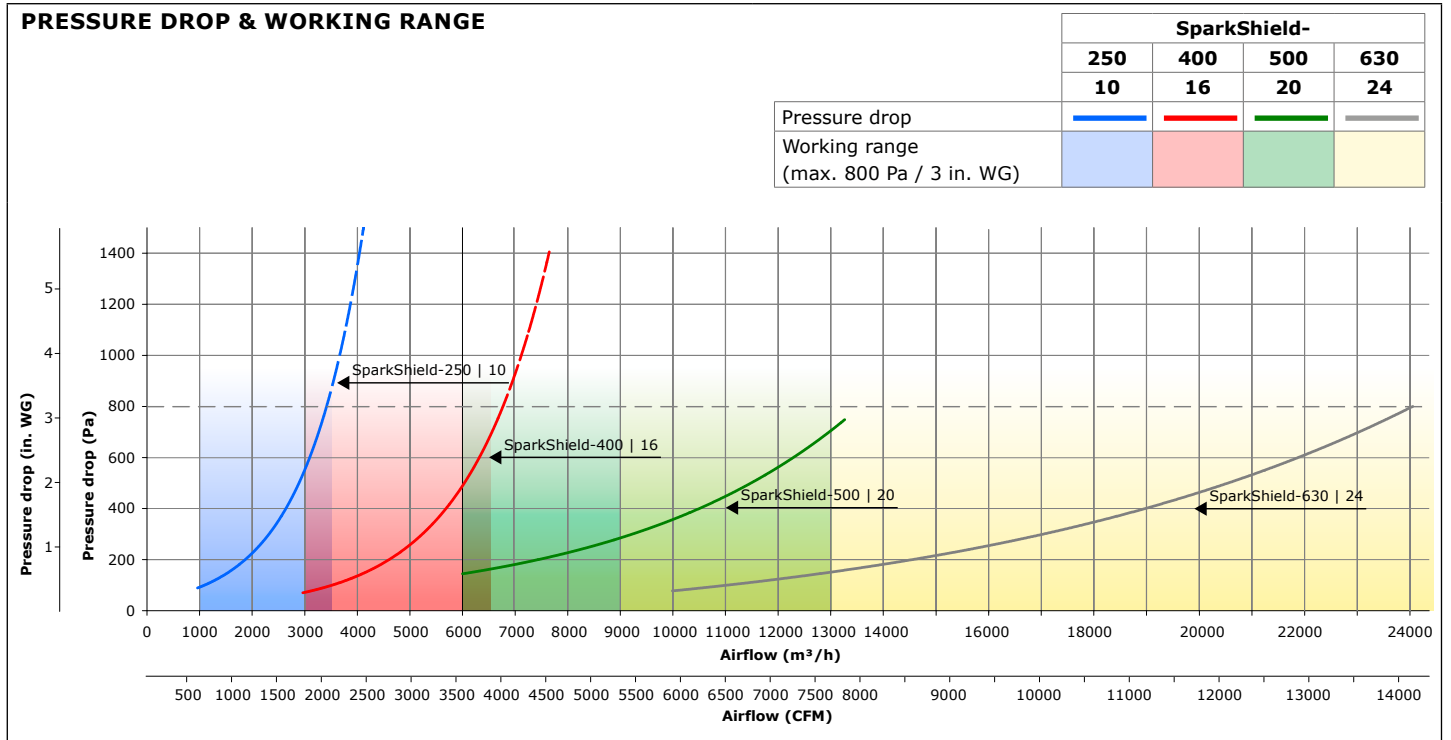


Fig. III Mounting instructions | airflow direction

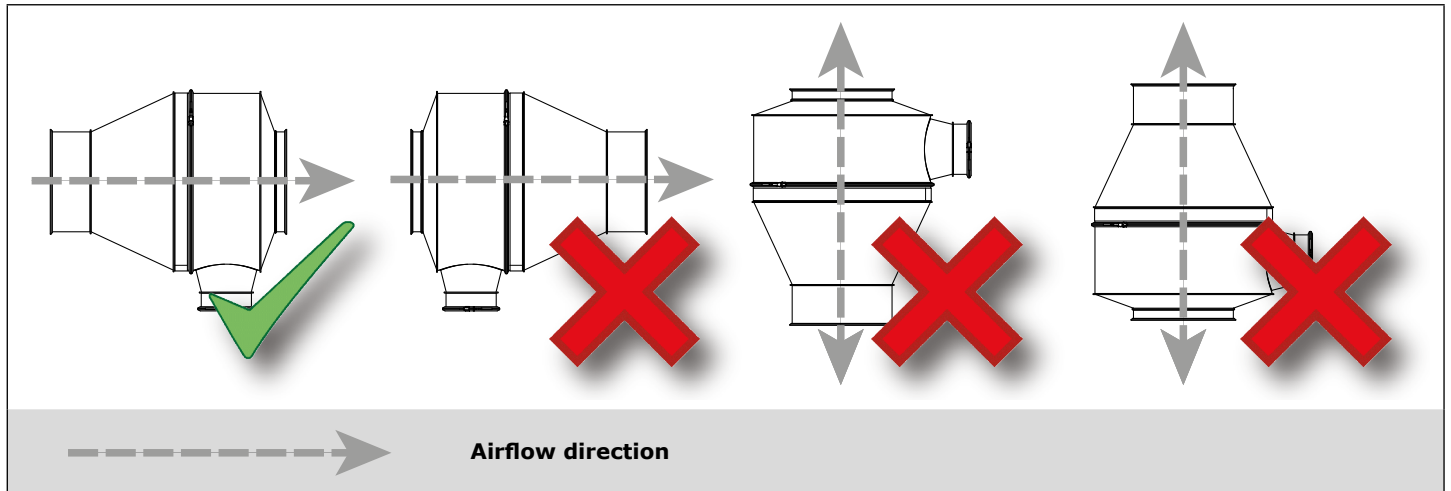


Fig. IV Mounting instructions | duct installation

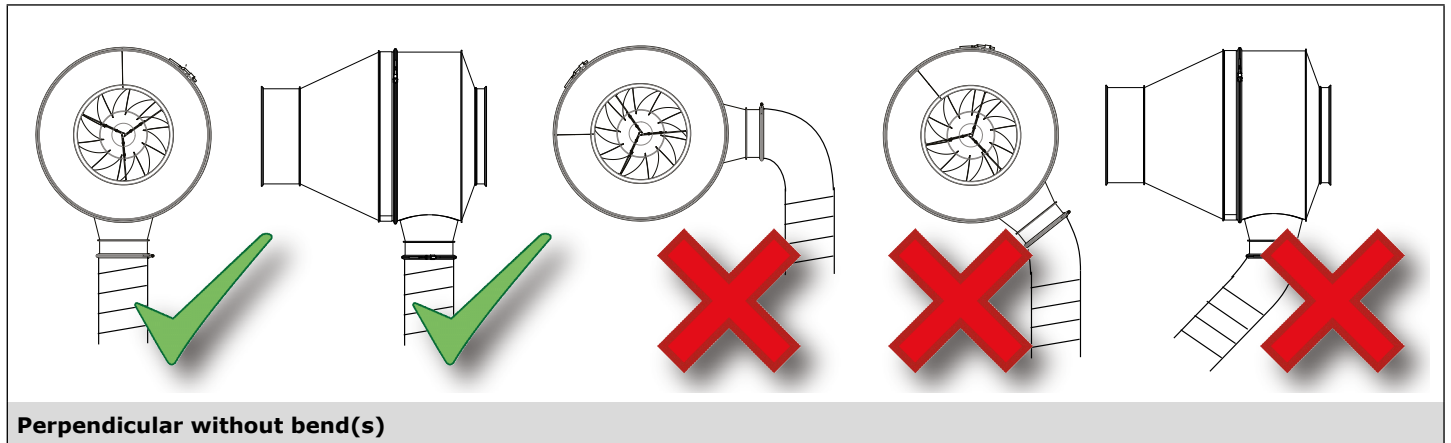


Fig. V Mounting instructions | installation in an existing duct

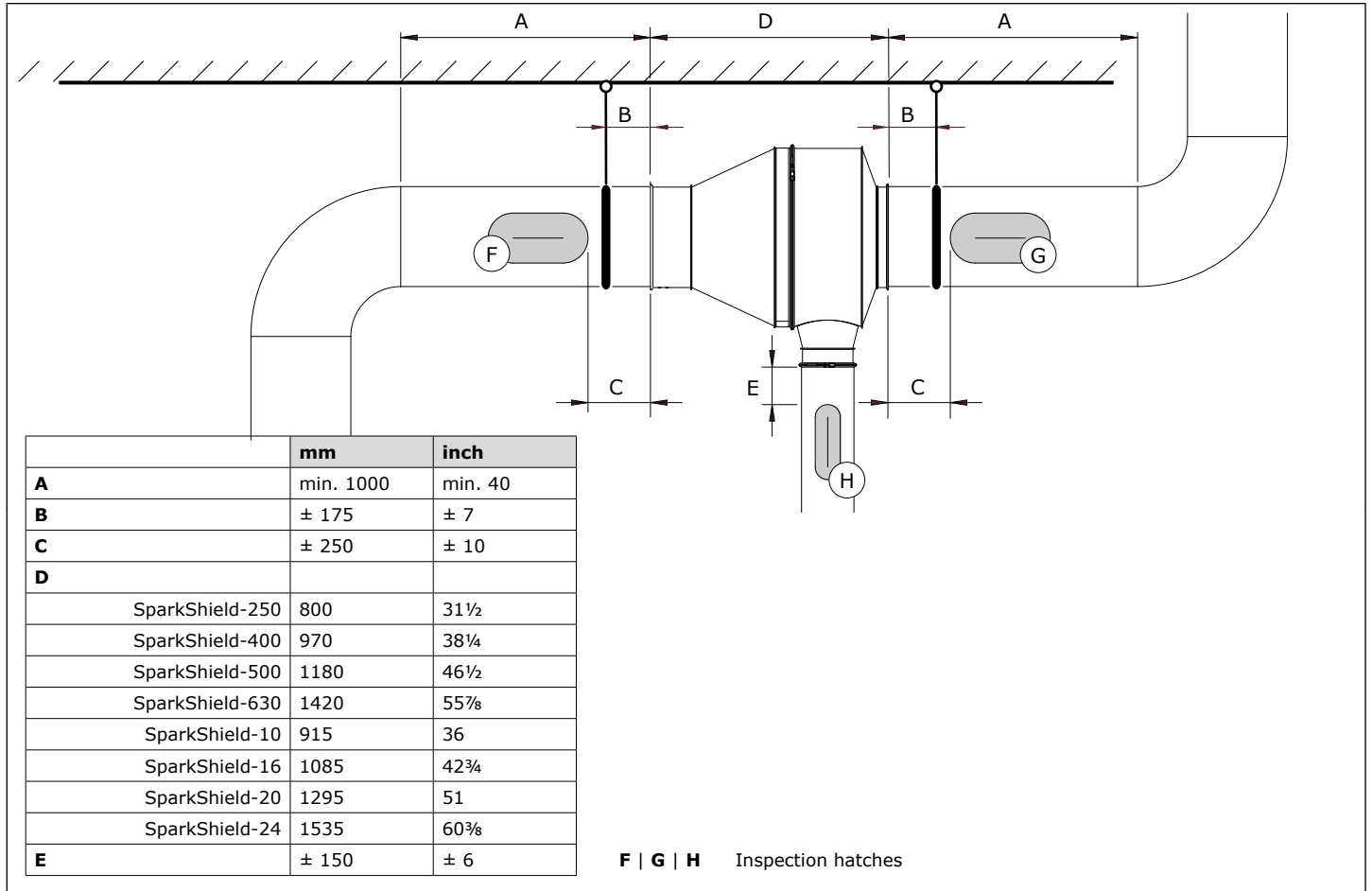
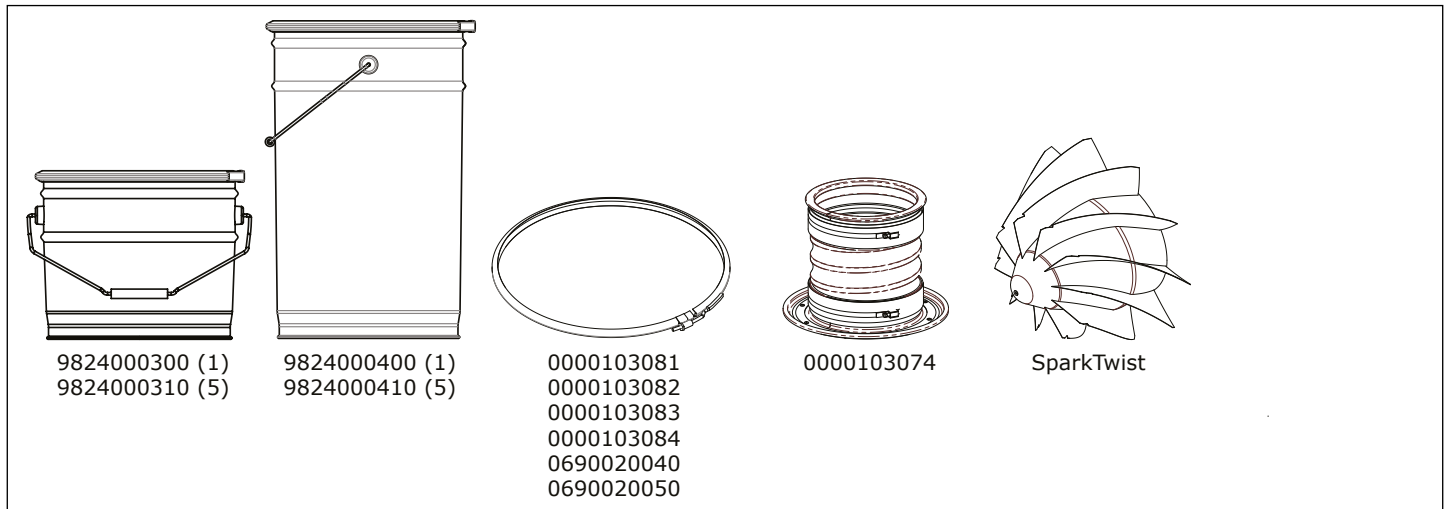


Fig. VI Spare parts



Article no.	Description
9824000300	DB-13 Dustbin 13 litres
9824000310	DB-13 Dustbin 13 litres (5 pcs)
9824000400	DB-25 Dustbin 25 litres
9824000410	DB-25 Dustbin 25 litres (5 pcs)
0000103074	Dustbin cover incl. connection flange + hose
0000103081	Duct clamp Ø 200 mm/8 inch
0000103082	Duct clamp Ø 250 mm/10 inch
0000103083	Duct clamp Ø 400 mm/16 inch

Article no.	Description
0000103084	Duct clamp Ø 500 mm/20 inch / housing SparkShield-250 10
0690020040	Duct clamp housing SparkShield-400 16
0690020050	Duct clamp housing SparkShield-500 20
<i>on request</i>	SparkTwist-250 400 500 630

