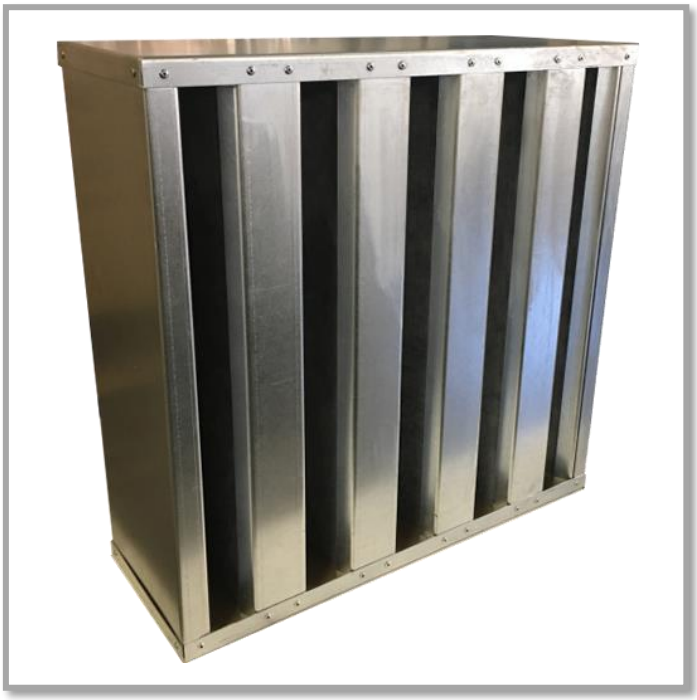
Carbon Discarbs and Panels



Application

Carbon filtration is ideal for removing unpleasant or even dangerous odours and gases from a wide variety of sources. The ever increasing awareness of this problem from public health authorities and environmentalists has resulted in an increase in the use of the unique properties of activated carbon filtration.

Carbon will adsorb chemical molecules in the air stream in varying degrees according to the type of contaminant and the period of time the air remains resident in the carbon. Activated Carbon in its loose granular form can present problems as there is a tendency for granules to abrade one another, this causes both settlement of the carbon – creating potential bypass voids and produces carbon dust that can be re-entrained into the air-stream. The unique bonding method eradicates these problems by producing a solid and stable biscuit of consistent quality and dimensional stability that produces an even resistance. Once formed the biscuits are bonded in a rigid mitred 'U' channel Frame for a panel or into a galvanised steel case for the discarb.

Operational Criteria

As far as possible water vapour should be eradicated from the air-stream to eliminate condensation within the filter that could cause porous blockage causing a dramatic increase in resistance – this also applies to loose carbon, however humidity levels as high as 80% RH are normally acceptable providing no interstitial condensation takes place.

Air-stream temperatures entering the filter in excess of 40°c should be avoided. In the case of anticipating temperatures above this level steps should be taken to reduce the temperature to an acceptable level by fresh air bleed, cooling coil or heat exchanger. In catering and food preparation applications smoke and grease must be removed from the air-stream prior to entry into the carbon

Dwell Times

In order to ensure a carbon filter operates satisfactorily certain criteria need to be met which do not apply to particulate filters. The most important aspect is the "dwell time" (the period of time the air is in contact with the carbon). The minimum dwell time used is 0.1 seconds and this is shown below as maximum permissible airflow. The dwell time may increase considerably according to the contaminant to be removed.

Technical Information

Due to the complex nature of adsorption, carbon filters are generally designed to suit the application, however, the following information is given as an indication of the physical requirements for their use.

Filter Type	Typical Panel Size (HxWxD)	Maximum Permissable Airflow (m^3/s) at 0.1 sec dwell time	Resistance at 0.1 sec (pa)	Resistance at 0.2 sec (pa)
Panel Frame	595 x 595 x 20mm	0.07	100	50
Panel Frame	595 x 595 x 45mm	0.16	100	50
Panel Frame	600 x 600 x 22mm	0.07	100	50
Panel Frame	495 x 495 x 18mm	0.06	100	50
Discarb	597 x 297 x 597mm	0.52	130	65
Discarb	597 x 597 x 293mm	0.52	130	65
Discarb	597 x 198 x 597mm	0.34	130	65
Discarb	597 x 597 x 597mm	1.04	130	65

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ODOUR CONTROL

OC INNOVATIONS - OC2

Process Information

Oxidation using ozone and activated oxygen ions is used to treat odour emissions from commercial and industrial kitchen processes (DEFRA, 2005: Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems).

The OC2 has been specifically designed for use in commercial kitchens. The system injects ozone into the kitchen extraction canopy or associated duct work where it reacts with odours, which are oxidized in a chemical reaction, which results in the production of carbon dioxide and water vapour. The ozone itself is consumed during the process and is converted back into oxygen.

The benefits of purchasing an OC2 unit over traditional UV/Ozone systems are as follows:

- Compact, lightweight and quiet operation so is less obtrusive
- Quick and easy low cost installation
- Low capital and running costs – up to 50% less than traditional UVC systems
- Injection into ductwork – adding negligible back pressure to the system so requiring less energy to push air through the air handling system. This means less ductwork modifications
- The OC2 maintains efficiency as they remain outside of the air stream, they also require less maintenance and require less cleaning.
- Tested to EN13725:2003, CE Approved

Spec sheet overleaf >

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ODOUR CONTROL

OC INNOVATIONS - OC2 (SPECIFICATIONS)

TECHNICAL INFORMATION

Ozone Output:	20g/hr ozone output
Housing dimensions:	290mm W 290mm L 290mm H
Housing material:	Stainless Steel powder coated black
Duct work connection:	100mm circular
Volume flow rate in ductwork:	Up to 2m3/s per unit, subject to cooking odours.
Air residence time inside chamber:	>0.1 seconds
Pressure drop:	N/A
Weight of unit:	10Kg approx.
Electrical requirements:	240V / 1 ph / 50/60Hz
Power requirements:	168W
Safety:	THE UNIT MUST BE INTERLOCKED IN TO FAN CONTROL SYSTEM

INSTALLATION

It is recommended to locate the units with an injection point located closest to the source of odours (i.e. Canopy plenum or nearest accessible point on ductwork, in order to maximize dwell time. In any case the dwell time must be no less than 1 second.

The system is powered via a fused spur/socket, which is interconnected to the main extraction fan control to ensure that the OC2 units only operate when the main fan is operating.

THE UNIT MUST BE INTERLOCKED INTO THE FAN CONTROL SYSTEM

MAINTENANCE

An optional service contract is available which entails a yearly inspection of the unit.
Please contact us for further information and pricing.

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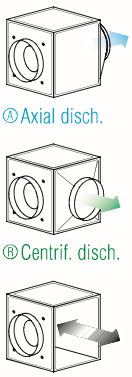
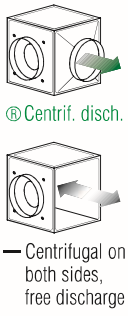
GB

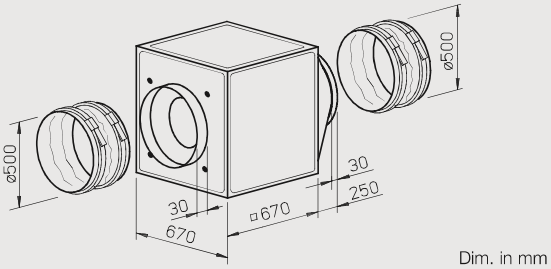
Arbitrary installation position and flexible assembly by five possible discharge directions.

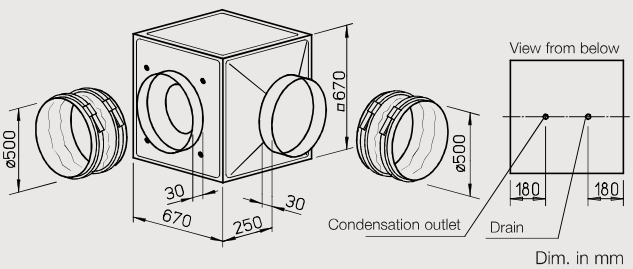


GB T120

Designed for moving dirty, humid and hot air up to max. 120° C.
Motor located outside the air flow.







■ Special features of types GB T120

- Designed for moving dirty, humid and hot air volumes up to max. 120° C.
- Motor located outside of air flow.
- Temperature insulated partition panel between motor and impeller, lined with 20 mm thick, flame-retardant mineral wool.
- Easily accessible motor and impeller unit, removable without disassembling the system components.
- Inspection cover with handle, simply remove for cleaning and maintenance.
- Condensate collector with condensate spigot included in delivery. Drill hole for rain drainage (accessories) for outdoor installation is prepared.

□ Assembly GB T120

Installation must be carried out with condensation discharge showing downward. Flexible assembly by three possible centrifugal discharge directions via the discharge adapter.
Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

■ Feature

□ Assembly of types GB

Arbitrary installation position and flexible assembly by five possible discharge directions via the discharge adapter.
For wall mounting the wall bracket (accessories) have to be used. Outdoor installation is possible using outdoor cover hood and external weather louvers (accessories).

■ Specification of both types

□ Casing

Self-supporting frame construction from aluminium hollow profiles. Double-walled side panels from galvanised sheet steel, lined with 20 mm thick temperature insulating and flame-retardant mineral wool. Intake cone for ideal inflow as well as spigot and flexible sleeve (for the respective max. permissible air flow temperature) for duct connection. With discharge adapter (from square to circular) on the pressure side for low-loss discharge and flexible sleeve to reduce vibration transmission. Simple positioning by standard crane hooks.

□ Impeller

Smooth running backward curved aluminium centrifugal impeller highly efficient and direct driven. Energy efficient with a low noise development. Dynamically balanced together with the motor to DIN ISO 1940 Pt.1 – class 6.3.

□ Motor

Maintenance-free external rotor motor or IEC-standard motor protected to IP 54. With ball bearings and interference-free as standard.

□ Electrical connection

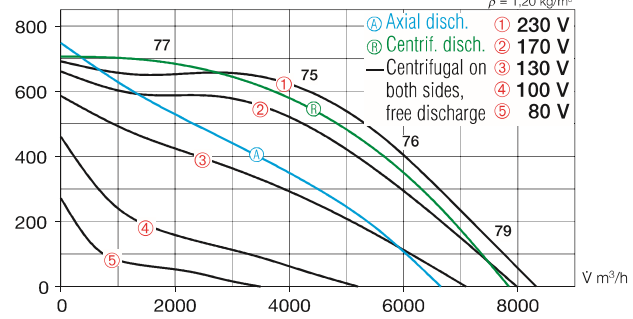
Standard terminal box (IP 54) fitted on the motor; with GB T120 fitted on the motor support plate.

Type	Ref. no.	Air flow volume (FID)	R.P.M.	Sound press. case breakout	Motor power (nominal)	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temperature Full load	Maximum air flow temperature controlled	Weight (net) kg	5 step transformer controller with mot. protect. unit	Ref. no.	5 step transformer controller without mot. protect. unit	Ref. no.	Full motor protection unit using the thermal contacts	Ref. no.
		V m³/h	min⁻¹	dB(A) in 4 m	kW	A	A	No.	+°C	+°C	kg	Type		Type		Type	
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54																	
GBW 500/4	5517	8321	1401	47	1.50	6.70	9.60	865	65	55	61	**MWS 10**	1946	**TSW 10**	1498	**MW** [1]	1579
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△ wiring, protection to IP 54																	
GBD 500/4/4	5518	8000/9200	1075/1340	45	0.97/1.45	1.60/2.80	2.90	867	50	50	57	**RDS 7**	1578	**TSD 5,5**	1503	**MD**	5849
1 Phase motor, 230 V / 1 ph. / 50 Hz, capacitor motor, protection to IP 54																	
GBW 500/4 T120	5776	8345	1340	45	1.40	6.1	7.0	301	120	100	75	**MWS 10**	1946	—		—	
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△ wiring, protection to IP 54																	
GBD 500/4/4 T120	5777	7320/8350	1120/1370	45	0.95/1.30	1.60/2.50	2.5	947	120	110	75	**RDS 4**	1316	**TSD 3,0**	1502	**MD**	5849

1) incl. operation switch

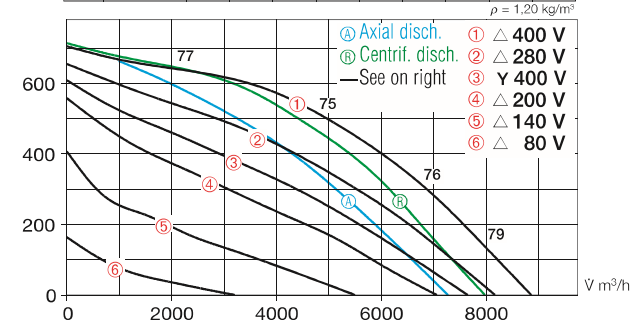
GBW 500/4

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	67	64	63	53	52	50	46	40
L_{WA}	Intake	dB(A)	79	63	72	72	74	72	66	59
L_{WA}	Exhaust	dB(A)	83	72	75	76	78	75	71	67



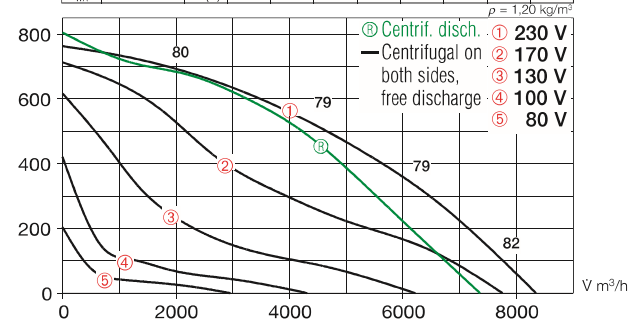
GBD 500/4/4

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	65	59	62	57	56	47	41	33
L_{WA}	Intake	dB(A)	77	57	66	69	74	70	64	55
L_{WA}	Exhaust	dB(A)	80	61	73	74	74	73	69	60



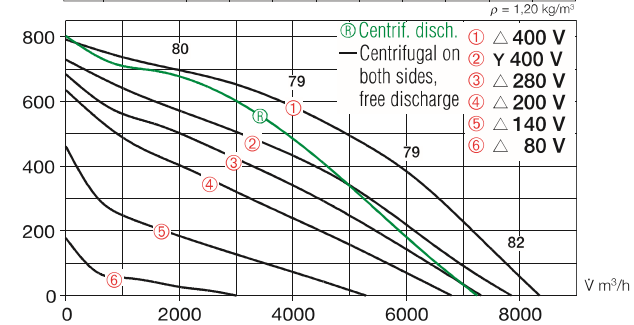
GBW 500/4 T120

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	65	54	61	58	57	56	50	42
L_{WA}	Intake	dB(A)	79	65	71	73	72	73	68	58
L_{WA}	Exhaust	dB(A)	82	66	74	75	77	76	68	60



GBD 500/4/4 T120

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Case breakout	dB(A)	65	54	61	58	57	56	50	42
L_{WA}	Intake	dB(A)	79	65	71	73	72	73	68	58
L_{WA}	Exhaust	dB(A)	82	66	74	75	77	76	68	60



Motor protection

Motors have thermal contacts wired to the terminal block and must be connected to a motor protection unit.

Speed control

All types are speed controllable by voltage reduction using a transformer controller.
The 3-phase models can also be 2 speed controlled by star/delta switch (accessories DS 2 or full motor protection unit M 4). The duties at different speeds are given in the performance curve.

Sound levels

Total sound power levels and the spectrum figures in dB(A) are given for:
- Sound level case breakout
- Sound level intake
- Sound level exhaust

In the table below as well as underneath the performance curve you can find additionally the sound pressure levels at 4 m (free field conditions).

Accessories of both types

Anti vibration mounts for installation indoors. Set of 4.
SDD-U Ref. no. 5627

Wall bracket for wall mounting.
GB-WK 500 Ref. no. 5626

External weather louvers to cover exhaust opening.
GB-WSG 500 Ref. no. 5639

Outdoor cover hood for outdoor installation.
GB-WSD 500 Ref. no. 5748

On/Off and 2-speed switch for 3-phase Y/△ motors.
Type DS 2 [2] Ref. no. 1351

[2] full motor protection unit recommended: MD Ref. No. 5849

Specific accessories

for types GB

Condensate collector with condensate spigot for pipe connection.
GB-KW 500 Ref. no. 5644

(Condensate collector with condensate spigot included in delivery with GB T120).

for types GB T120

Rain drainage for outdoor installation (drill holes for rain drainage is already prepared).
GB-RA Ref. no. 9418

Information	Page
Information for planning	10 on
General techn. information, speed control	15 on
Accessory-Details	**Page**
Speed controller and full motor protection unit	525 on

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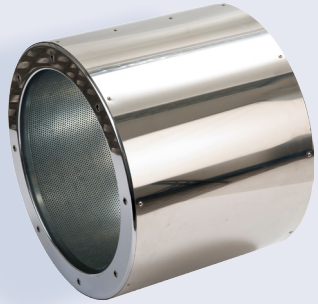
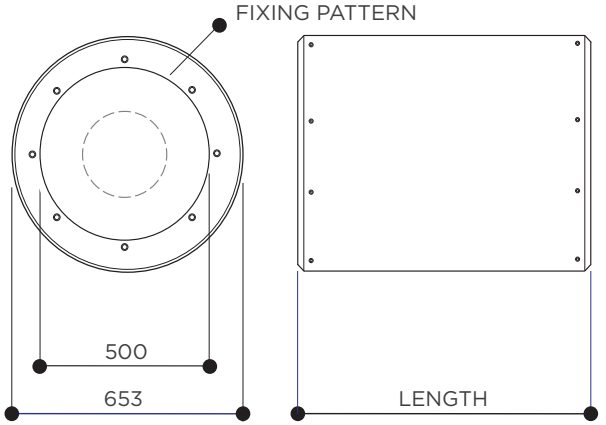
CP03-C-0500



500 DIA FAN MOUNTED SILENCER

Available in two standard lengths C Series Silencers have excellent attenuation properties, achieved with sound absorbing infill retained in the attenuator casing by a perforated liner. The central pod (code P) is an option to increase the insertion loss, however it will add resistance.

- Fits directly onto 500mm diameter fans
- Standard lengths 500mm (1D) & 1000mm (2D)
- Use up to 70°C (standard construction)
- Systems up to 1000 Pascals
- Special lengths on request



INSERTION LOSS (dB) - CENTRE BAND FREQUENCY

PRODUCT CODE	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
CP03-C*-0500-1D	2	3	6	14	14	12	10	5
CP03-C*-0500-2D	3	7	8	19	20	17	14	11
CP03-C*P-0500-1D	2	7	9	17	24	24	20	16
CP03-C*P-0500-2D	4	10	16	26	29	29	29	20

Insertion loss data is derived from continual testing to BS4718 and other standards in independent UKAS certified laboratories, which includes where appropriate, re-generated or self noise testing in both forward and reverse flow conditions. If you request system analysis from our technicians all predictions will be assessed using the relevant certified insertion loss data together with relevant dynamic corrections.

DIMENSIONAL DATA

CODE	LENGTH	FIXING PATTERN	MASS
CP03-CA-0500-1D	500mm	12 x M10-560 PCD	18 Kg
CP03-CA-0500-2D	1000mm	12 x M10-560 PCD	32 Kg
CP03-CAP-0500-1D	500mm	12 x M10-560 PCD	22 Kg
CP03-CAP-0500-2D	1000mm	12 x M10-560 PCD	37 Kg
CP03-CB-0500-1D	500mm	12 x M8 - 541 PCD	18 Kg
CP03-CB-0500-2D	1000mm	12 x M8 - 541 PCD	32 Kg
CP03-CBP-0500-1D	500mm	12 x M8 - 541 PCD	22 Kg
CP03-CBP-0500-2D	1000mm	12 x M8 - 541 PCD	37 Kg

C-Series™

CP03-C-0500

ACOUSTICA™

MATERIAL & FINISH

All casings are manufactured from mill finish hot dip galvanised mild steel conforming to EN10327 (BS2989) including the flow formed one piece end fittings. To prevent erosion of absorbing materials the C Series Silencers are fitted with a perforated liner manufactured from galvanised mild steel conforming to EN10327 (BS2989). The C Series Silencers utilise acoustic grade mineral fibre absorbing infill and are manufactured to the HVCA specification DW144 class B and M&E 100 for sheet steel thickness and stiffening.

Pressure Up to 1000 Pascals positive and negative.

Temperature -12° to +70° C.

Location Internally & externally mountable.

MELINEX LINING (OPTIONAL)

Where moist conditions exist (e.g. process systems) or for critically clean applications (e.g. hospitals) the sound absorbing material may be required to be fully sealed by Melinex lining to prevent fibre migration. This will however, effect the acoustic performance of the silencer. Please contact us to discuss your requirements.

ALTERNATE SPECIFICATION

The above specification refers to our standard stock range. We can also supply custom made C Series Silencers with alternative dimensions, temperature ratings, construction materials and product finishes. Please contact us for further information and advice.

PRODUCT CODE GUIDE

Example: **CP03-CAP-0500-2D**

CP03 Product Group Code

CA Drilling Pattern CA for A or CB for B

0500 Internal Diameter

2D Length code 1D = 500, 2D = 1000

RESISTANCE TO AIRFLOW (Pa)

AIR VOLUME M^3/s	0.5	0.6	0.8	1.0	1.3
CP03-C*-0500-1D	-	-	-	-	-
CP03-C*-0500-2D	-	-	-	-	-
CP03-C*P-0500-1D	10	24	40	80	120
CP03-C*P-0500-2D	21	36	61	124	188

- represents a negligible resistance to airflow that can be assumed to be equivalent to a duct section of the same length.

INSTALLATION

For recommendations for the support of the silencer the principles of Part Six (pages 43-46) of the HVCA DW144 standard should be followed. It is important that the recommendations in the table are adhered to when locating the silencer in relation to other duct-mounted equipment. If the silencers are to be used in conjunction with equipment not listed please enquire for advice.

ITEM	LOCATION
Centrifugal Fans	Direct couple only at the same size; use an inlet cone if open after silencer. PODDED - position one duct diameter from fan inlet / outlet.
Axial Fans	Direct couple only at the same size. Use an inlet cone if open after silencer. PODDED - match hub size within 30% of half nominal diameter.
Mixed-Flow Fans	Direct couple only at the same size. Use an inlet cone if open after silencer.
Ductwork Bends	Direct couple only at the same size. PODDED - position two duct diameters from bend.
Ductwork Reducers	Direct couple only with reducers of maximum 15° cheek slope.
Finned Coils & Filters	Leave 200mm plenum between silencer and coil or filter, and suitable reducer as specified in HVCA DW/144 1998.

MAINTENANCE

Silencers are of a passive nature and as such require no routine maintenance or lubrication.

INSPECTION

For inspection access the recommendations set out in Heating & Ventilating Contractors Association specification DW144 1998, appendix M – Guidance Notes for Inspection, Servicing and Cleaning Access Openings, should be followed. We would suggest Level 2 one 300mm x 200mm-inspection panel down-stream or Level 3 one 300mm x 200mm inspection door each side of the silencer. Refer to table 25 of DW144 or Section 2 of HVCA specification TR17 for further recommendations.

It is our recommendation that the silencers are inspected periodically to ensure that the airways are free from obstructions and no dust or foreign matter has collected and blocked the holes in the perforated liner elements.

CLEANING

Should airways require routine cleaning we recommend low-pressure air blasting, vacuuming or wiping the exposed surfaces with a damp cloth. It is not unusual for “White Zinc Oxide” to develop on galvanised silencers when the zinc in the galvanising reacts electrolytically with moisture.

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