

Diesel Particulate Filter for Trucks SMF® / CSMF® System



for Mercedes-Benz Trucks

Technical Description
Installation Instructions
Putting Into Service
Maintenance Manual





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Brief Overview of Scope of Application

Engine series	OE no. silencer	Code no. HJS	CRT® System	Engine power [kW]
Atego OM 904 / 906	A 973 490 04 01	93 64 3605 SMF® 93 75 3605 CSMF®	CRT® 81 (OM 906)	90 -205
	A 970 490 00 01	93 64 3590 SMF® 93 75 3590 CSMF®	CRT® 82 (Form A) (Exhaust pipe on right)	
	A 970 490 03 01	93 64 3821 SMF® 93 75 3821 CSMF®	CRT® 81 (OM 904) (System larger than OE)	
	A 973 490 00 01	93 64 3535 SMF® 93 75 3535 CSMF®	CRT® 80 (Form A)	
	A 975 490 01 01	93 64 3768 SMF® 93 75 3768 CSMF®	CRT® 80 (Form B) (Exhaust pipe pointing up)	
Axor/Econic OM 906	A 940 490 01 01	93 64 3861 SMF® 93 75 3861 CSMF®	CRT® 72 (Form A) (Exhaust pipe pointing down)	170 - 205
	A 940 490 01 01	93 64 4290 SMF® 93 75 4290 CSMF®	CRT® 72 L (Exhaust pipe pointing down)	
	A 940 490 03 01	93 64 3053 SMF® 93 75 3053 CSMF®	CRT® 72 (Form B) (Exhaust pipe pointing up)	
Axor/Actros OM 457 / 501 / 541	A 942 490 21 01	93 64 3580 SMF® 93 75 3580 CSMF®	CRT® 83 (Form A) (Exhaust pipe pointing down)	230 - 335
	A 942 490 27 01			
	A 942 490 35 01			
	A 942 490 37 01			
Axor/Actros OM 457 / 501 / 541	A 942 490 1301	93 64 6440 SMF® 93 75 6440 CSMF®	CRT® 83 (Form B 2) (Exhaust pipe pointing up)	230 - 335

-  Application range of **SMF® System** (with HJS Service Unit for **uncoated** filters): Long-haul traffic
-  Application range of **CSMF® System** (with HJS Service Unit for **coated** filters): Low-temperature applications /
Distribution vehicles /
Municipal utility vehicles



Dear customer!

HJS Fahrzeugtechnik GmbH & Co KG congratulates you on your decision to equip your vehicle with a modular SMF®/CSMF® system.

The instructions described in this document and stipulated by the manufacturer must be complied with. Non-compliance will result in the exclusion of all claims for warranty and of liability on the part of HJS Fahrzeugtechnik GmbH & Co KG for any form of personal injury and material damage.

The modular SMF®/CSMF® system is to be used solely to filter the exhaust emissions of diesel engines and for no other purpose. The manufacturer shall accept no liability if the product is not used in the manner intended.

The general accident prevention regulations and all other generally recognised rules pertaining to safety and industrial health are to be complied with at all times.

The high standards of safety and quality at HJS Fahrzeugtechnik GmbH & Co KG are guaranteed by continuous ongoing development. Please note that automotive manufacturers install different levels of equipment in their vehicles and that this can result in differences between the description given in this document and the actual situation in your vehicle. Despite having taken great care and attention while compiling this manual, we cannot exclude the possibility of errors. Please understand that no claims will be able to be made on the basis of the data and/or figures in this manual.

No part of this document may be stored in a database or transmitted in any form (electronically, photomechanically or on a sound recording medium) without the prior written permission of HJS Fahrzeugtechnik GmbH & Co KG.

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We reserve the right to make technical changes. Date: 12/2009

Brief Overview of Retrofitting

Further information on retrofitting can be found in the relevant sections.

The following steps must be taken when retrofitting:

- > System test depending on the operating conditions/product list
- > Exhaust emissions test must be passed **prior to** installation
- > Original silencer must be replaced with a SMF® or CSMF® system
- > HJS Service Unit must be fitted in accordance with the relevant HJS documentation
- > Exhaust emissions test must be passed **following** installation
- > Documentation must be completed
- > Toll rates must be re-registered with Toll Collect



Information about and conventions applied in the Installation Instructions and Maintenance Manual sections

This documentation describes the installation and maintenance procedures for a SMF® or CSMF® system. Further information on installation and operation of the HJS Service Unit can be found in the relevant documents from HJS

- > Work instruction or listing

(1) / ❶ Legend entry in text or a figure/photo

Safety instructions and warnings



These safety instructions must be observed for the sake of your own safety and the safety of others.



General instructions and additional pieces of information must be observed in order to prevent damage to the vehicle or the SMF®/CSMF® system.



All work procedures must be carried out by qualified staff of a vehicle workshop.

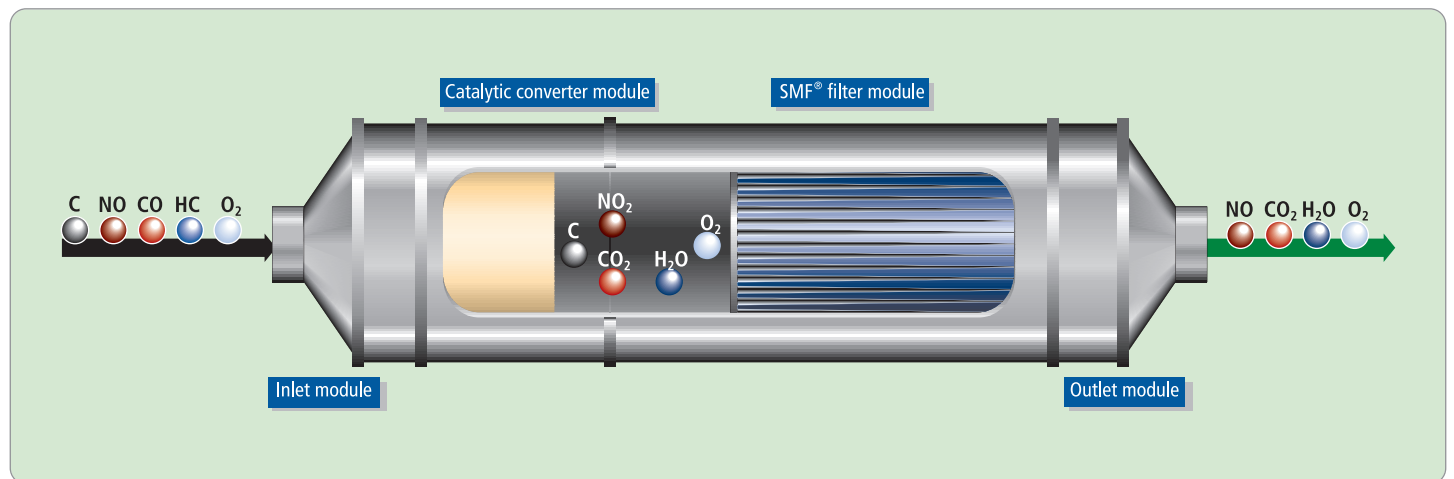


Technical Description

SMF® System / CSMF® System

A highly efficient oxidation catalytic converter (DOC) is fitted upstream of a diesel particulate filter made of sintered metal. The catalytic converter oxidises the hydrocarbons and carbon monoxide to form carbon dioxide and water. The nitrogen monoxide (NO) is oxidised to form nitrogen dioxide (NO₂).

This nitrogen dioxide then in turn oxidises the soot trapped in the diesel particulate filter. The modular SMF®/CSMF® system does not need regeneration aids of any kind. It is reliable and low-maintenance.



SMF® sintered metal filter

The advantages of the sintered metal filter stem from its special design. Apart from the fact that it uses sintered metal, which guarantees high durability, it is the special pocket design that gives it a longer than average service life. By comparison with conventional ceramic filters, the SMF® also has an extremely high ash holding capacity, which again is due to its design. This is important because it is the ash content of oil that clogs up a filter. Particularly in older trucks, which can have a high oil consumption, the SMF® is guaranteed to last for many miles.

Today, it is not only capital costs that are significant for fleet operators but also the fixed costs incurred when vehicles are in the workshop for servicing and maintenance (outage times). Consequently, the fact that a sintered metal filter can be used in a vehicle for many more miles than a ceramic filter before having to be cleaned means workshop costs can be reduced significantly.



Selecting the System Depending on the Operating Conditions

To ensure the correct HJS filter system is selected for a particular vehicle, HJS has drawn up a form in which the operator can specify the different kinds of traffic conditions in which the truck is deployed and appropriate percentages, e.g. 60% motorway / 40% inner-city.

> Sulphur-free diesel in compliance with DIN EN 590 must be used in order to ensure trouble-free operation of the HJS filter system. Likewise, low-ash engine oil must be used.

> In addition to combustible soot particles, HJS filter systems also remove from the exhaust gases all other particulate matter that cannot be burnt off in the filter regeneration process. For the most part, this is ash from burnt engine oil. For this reason, the exhaust backpressure of the systems must be checked regularly and the systems cleaned if necessary. The filter systems can be cleaned by the operator (see section entitled "Maintenance").

> Vehicles must be in perfect working order in order to ensure HJS filter systems function properly. The maintenance and servicing conditions specified by the vehicle manufacturer apply.

When to install a SMF® system

> Exhaust gas temperatures of between 250°C and 450°C in the silencer are required for SMF® systems to be used. This temperature range is essential for regeneration of the filter and is reliably reached when a truck is primarily used for **overland and motorway transport**.

> Only HJS electronic control units (ECU) marked "**uncoated**" are allowed to be used with HJS systems with an **uncoated** filter (SMF®). **Always** use the HJS ECU supplied with the filter system!



When to install a CSMF® system:

> Vehicles that are primarily used in **inner-city traffic and for short journeys** rarely reach the temperature range between 250°C and 450°C required for regeneration of the filter; the average exhaust gas temperature of such vehicles is lower. The regeneration function of filters in such vehicles can be improved by installing a sintered metal filter with catalytic coating – a "coated sintered metal filter" or CSMF®.

> To ensure proper and regular regeneration of CSMF® systems, the form drawn up by HJS must be completed with care, and we recommend that operators request specific approval from HJS that the system can be installed in their vehicle. In case of doubt, measurements may also be taken of the exhaust gas temperatures reached by a specific vehicle (in the silencer).

> Only HJS electronic control units (ECU) marked "**coated**" are allowed to be used with HJS systems with a **coated** filter (CSMF®). **Always** use the HJS ECU supplied with the filter system!



Product Overview

SMF® System:

CSMF® System:

Vehicle:

OE silencer:

CRT® 72 SMF®

CRT® 72 CSMF®

Econic / Axor

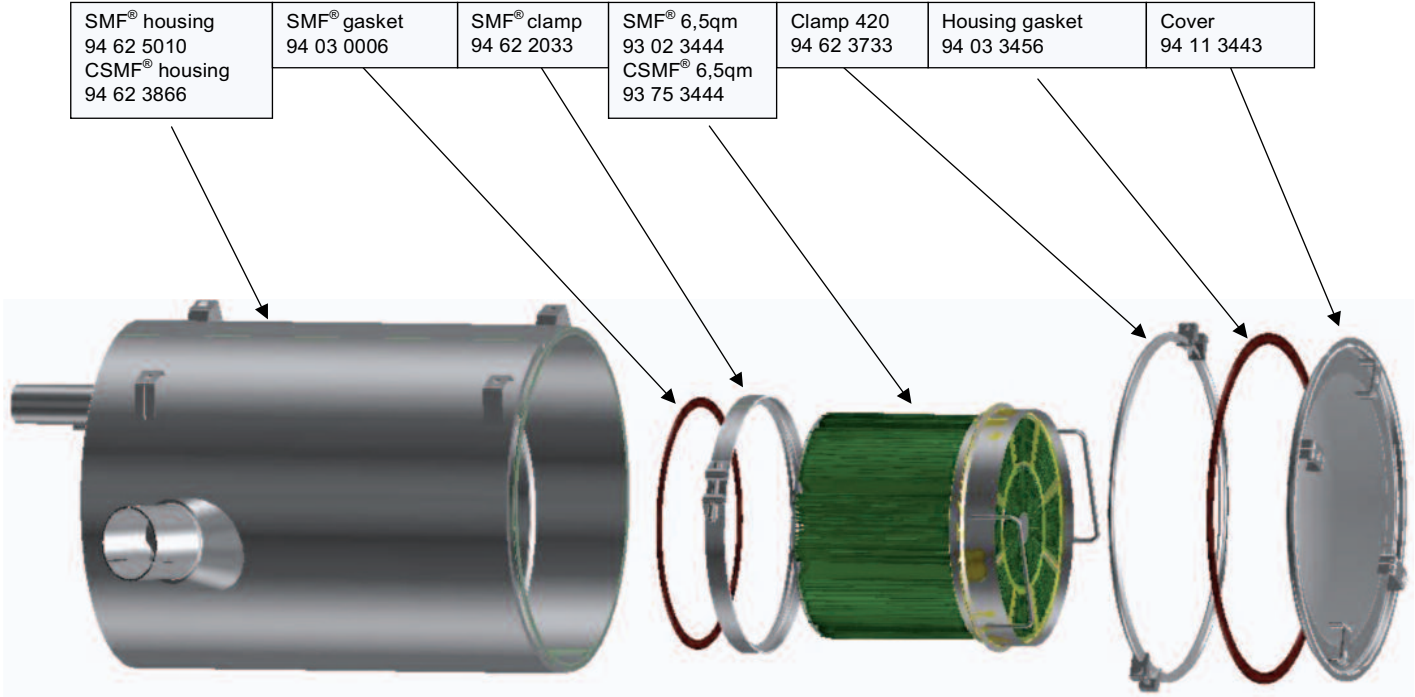
A 940 490 01 01

Form A

Form A

Article No.:93 64 3861

Article No.:93 75 3861



SMF® System:

CSMF® System:

Vehicle:

OE silencer:

CRT® 72 SMF®

CRT® 72 CSMF®

Econic / Axor

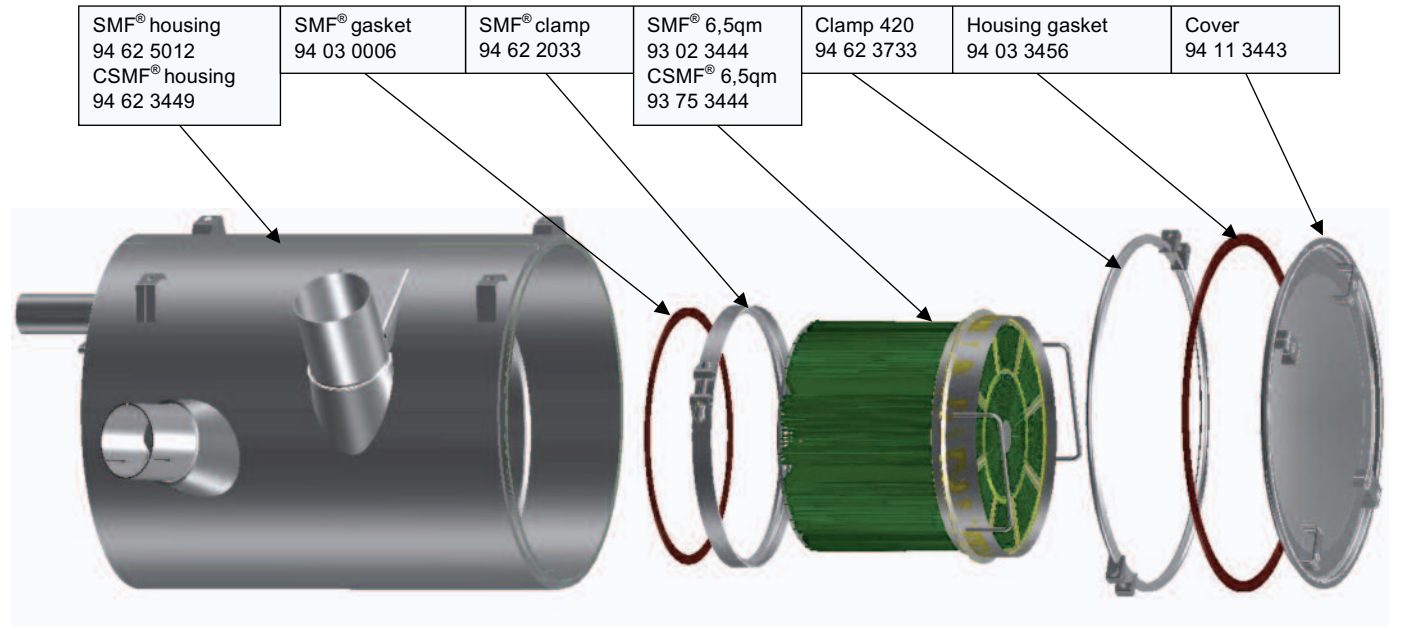
A 940 490 03 01

Form B

Form B

Article No.:93 64 3053

Article No.:93 75 3053

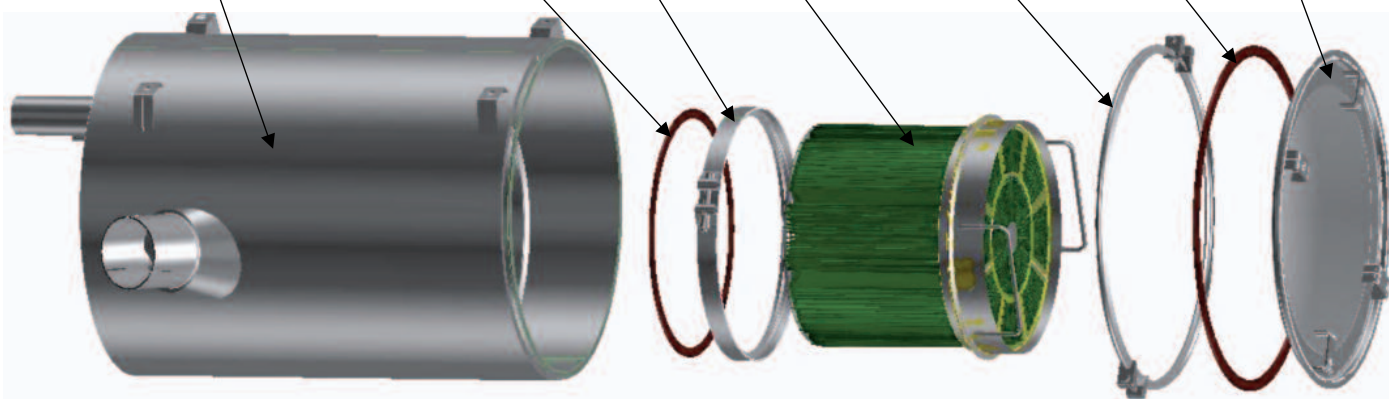




SMF® System: CRT® 72-L SMF® Form A Article No.: 93 64 4290
CSMF® System: CRT® 72-L CSMF® Form A Article No.: 93 75 4290
Vehicle: Econic / Axor
OE silencer: A 940 490 01 01

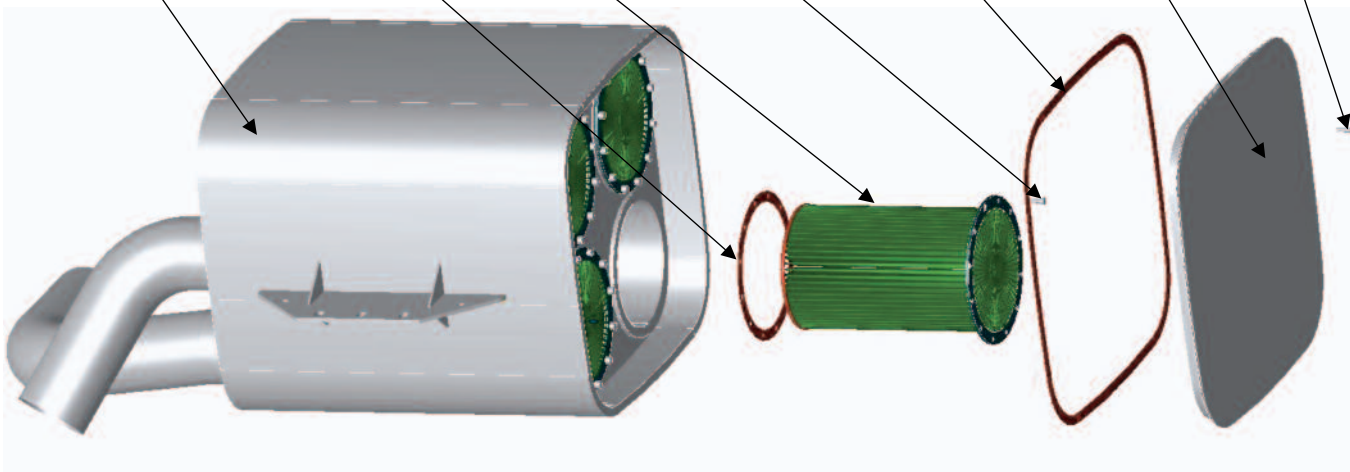
Note: SMF® /CSMF® System 80mm is longer

SMF® housing 94 62 5011 CSMF® housing 94 62 4292	SMF® gasket 94 03 0006	SMF® clamp 94 62 2033	SMF® 8,1qm 93 02 4291 CSMF® 8,1qm 93 75 4291	Clamp 420 94 62 3733	Housing gasket 94 03 3456	Cover 94 11 3443
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SMF® System: CRT® 80-A SMF® Form A Article No.: 93 64 3535
CSMF® System: CRT® 80-A CSMF® Form A Article No.: 93 75 3535
Vehicle: Atego 906
OE silencer: A 973 490 00 01

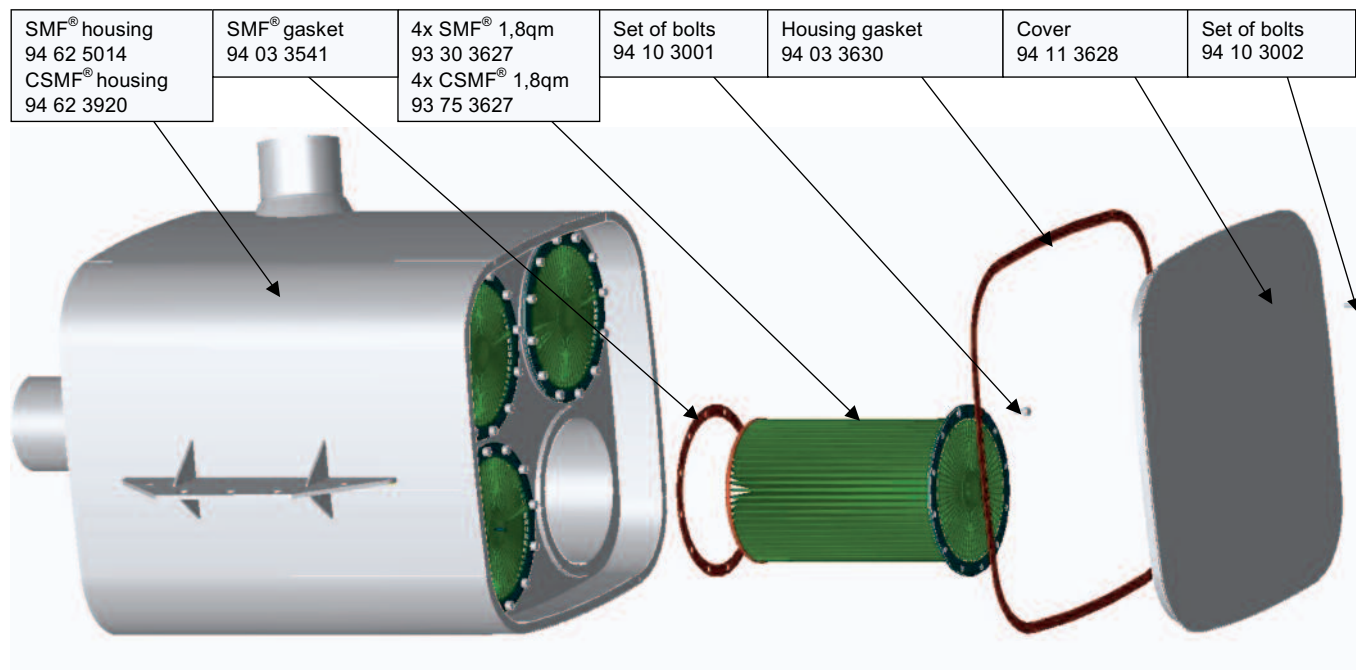
SMF® housing 94 62 5013 CSMF® housing 94 62 3698	SMF® gasket 94 03 3541	4x SMF® 1,8qm 93 30 3627 4x CSMF® 1,8qm 93 75 3627	Set of bolts 94 10 3001	Housing gasket 94 03 3630	Cover 94 11 3628	Set of bolts 94 10 3002
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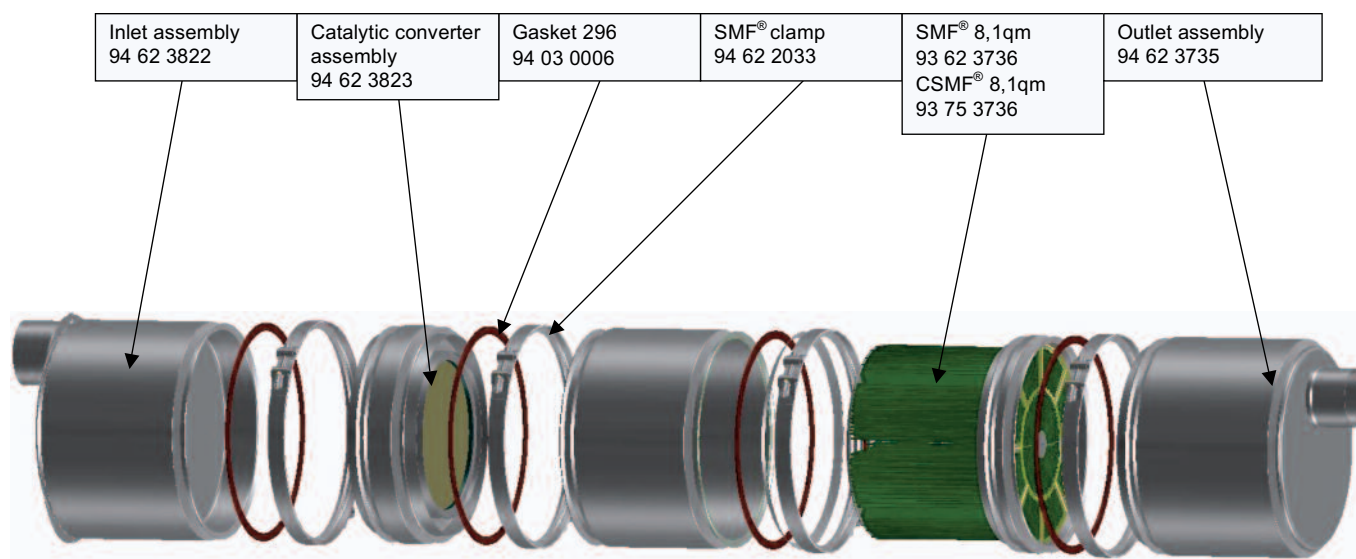


Product Overview

SMF® System: CRT® 80-B SMF® Form B Article No.: 93 64 3768
CSMF® System: CRT® 80-B CSMF® Form B Article No.: 93 75 3768
Vehicle: Atego 906
OE silencer: A 975 490 01 01

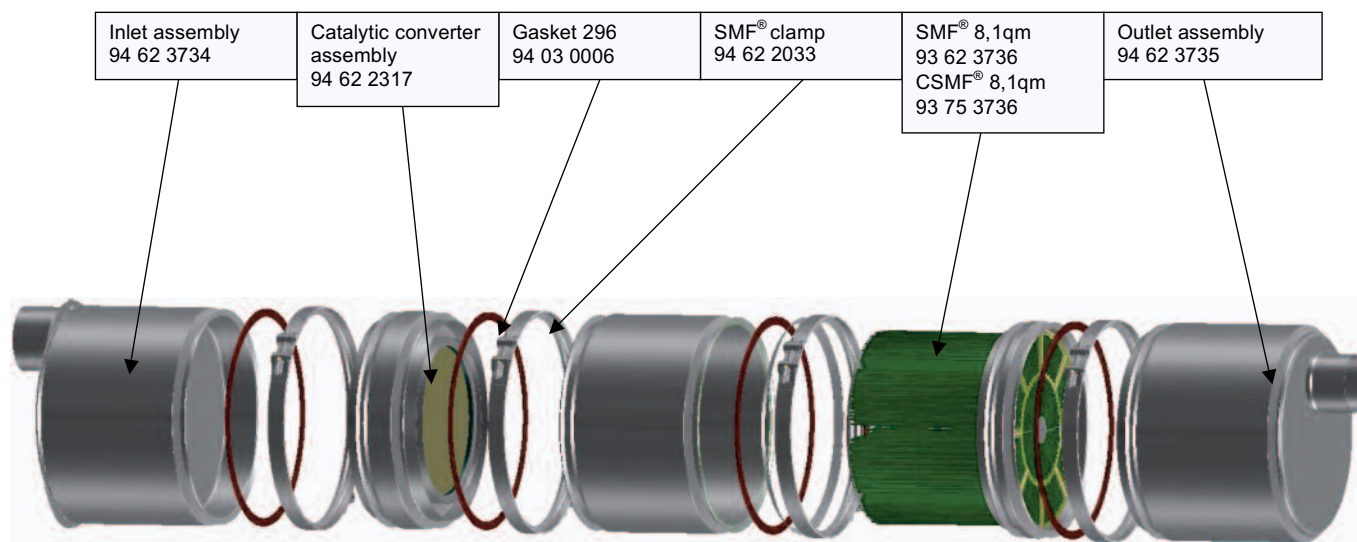


SMF® System: CRT® 81 SMF® Article No.: 93 64 3821
CSMF® System: CRT® 81 CSMF® Article No.: 93 75 3821
Vehicle: Atego 904
OE silencer: A 973 490 04 01

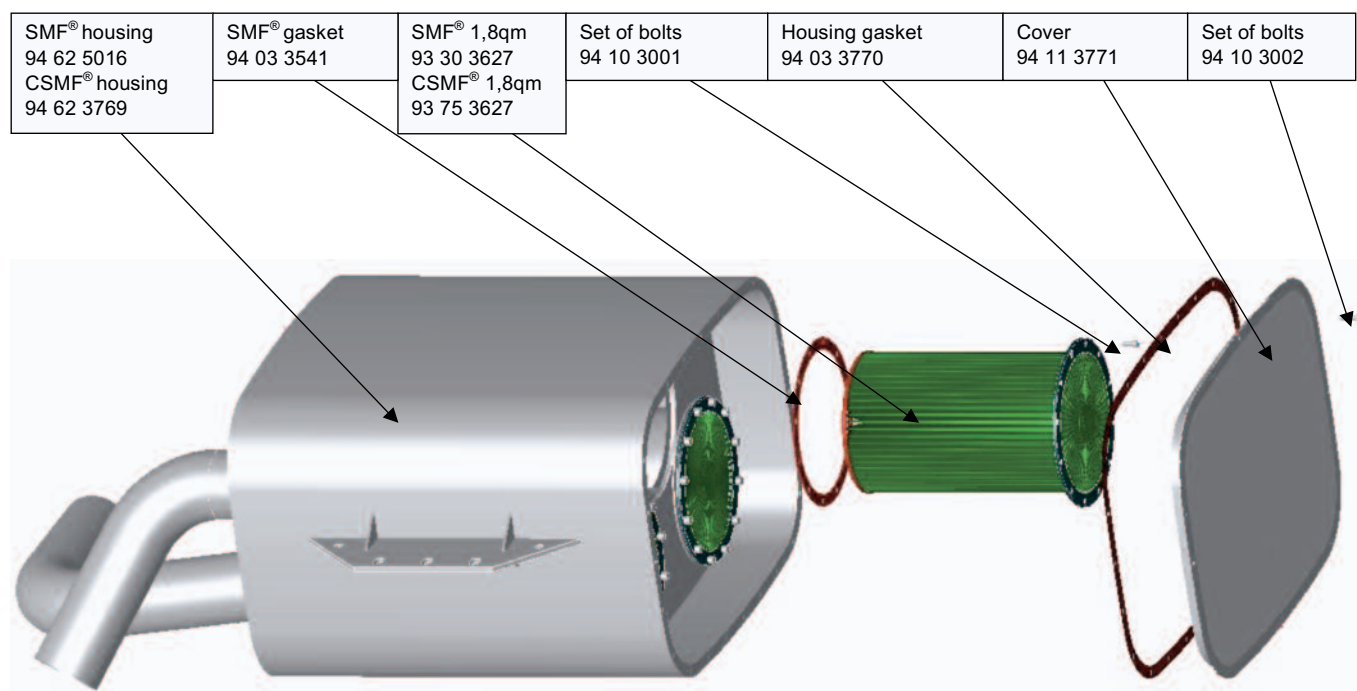


Note: This system corresponds to the OE-SD A 973 490 04 01 system for engine OM 906.
 The OE-SD A 970 490 03 01 system for engine OM 904 is shorter.

SMF® System: CRT® 81 SMF® **Article No.:** 93 64 3605
CSMF® System: CRT® 81 CSMF® **Article No.:** 93 75 3605
Vehicle: Atego 906
OE silencer: A 973 490 04 01



SMF® System: CRT® 82-A SMF® **Article No.:** 93 64 3590
CSMF® System: CRT® 82-A CSMF® **Article No.:** 93 75 3590
Vehicle: Atego
OE silencer: A 970 490 00 01



Product Overview

SMF® System:

CSMF® System:

Vehicle:

OE silencer:

CRT® 83-A SMF®

CRT® 83-A CSMF®

Actros / Axor

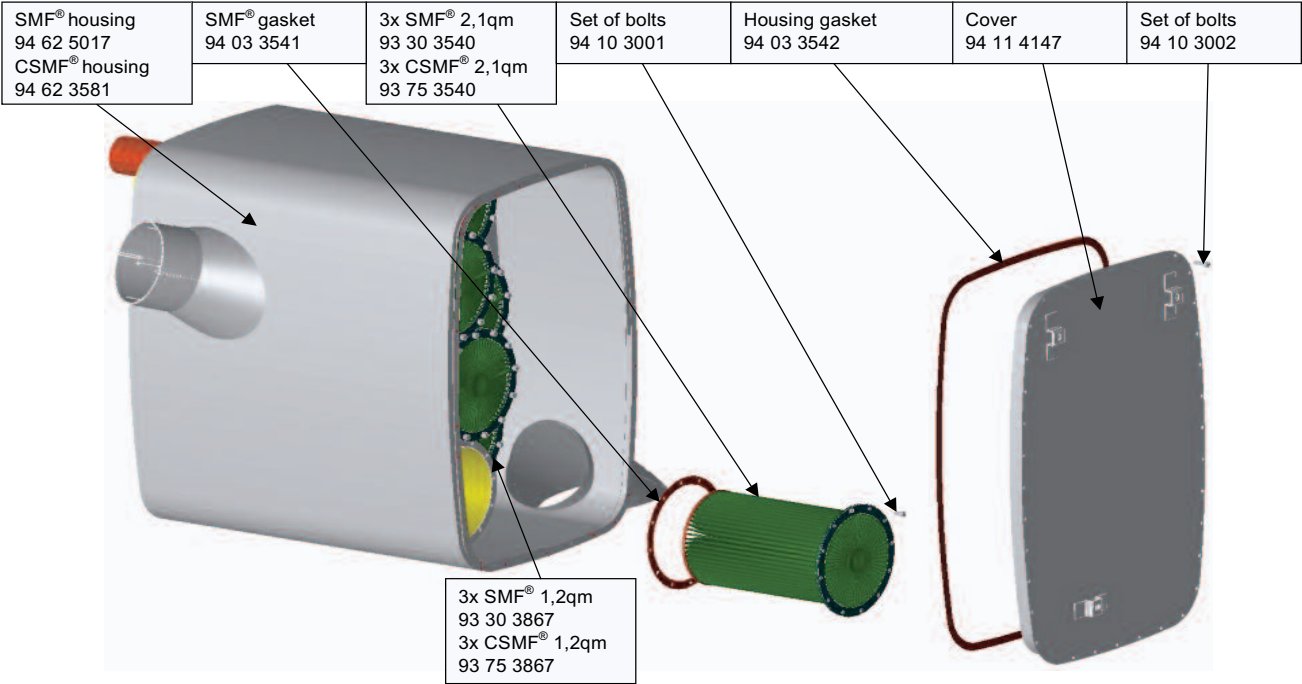
A 942 490 21 01 + A 942 490 27 01 + A 942 490 35 01 + A 942 490 37 01

Form A

Form A

Article No.:93 64 3580

Article No.: 93 75 3580



SMF® System:

CSMF® System:

Vehicle:

OE silencer:

CRT® 83-B 2 SMF®

CRT® 83-B 2 CSMF®

Actros / Axor

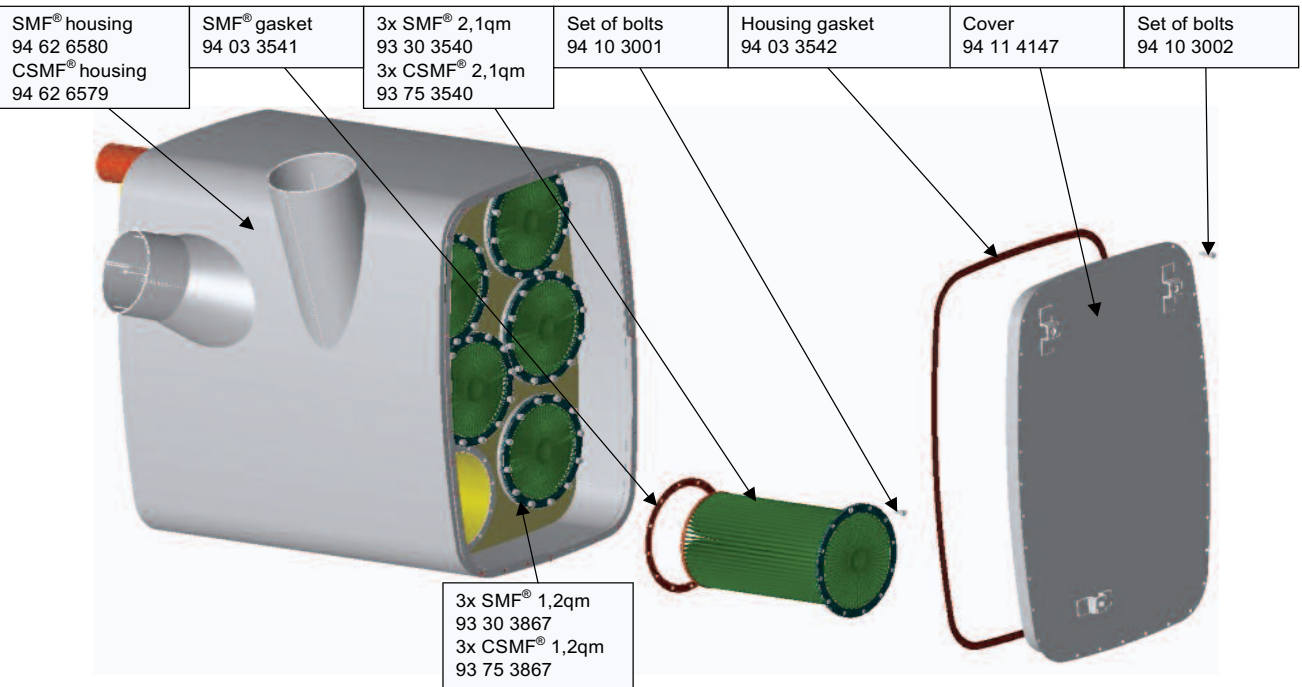
A 942 490 13 01

Form B2

Form B2

Article No.: 93 64 6440

Article No.: 93 75 6440





Installation Instructions

Preliminary remarks

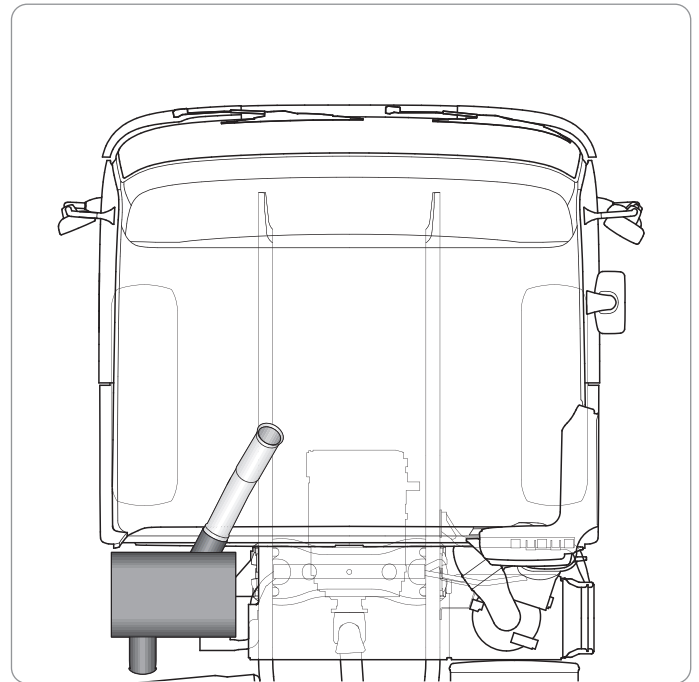
1. The general accident prevention regulations and generally recognised rules pertaining to safety and industrial health are to be complied with at all times.



All work procedures must be carried out by qualified staff of a vehicle workshop.

2. Please look at the OE number embossed into the silencer and check whether you have the correct SMF® / CSMF® system for installation in the vehicle (see section entitled "Product List").

3. Please look at the nameplate of the HJS ECU and check whether you have the correct version for installation in the vehicle, i.e. uncoated SMF® or coated CSMF® (see also section entitled "Selecting System Depending On Operating Conditions").



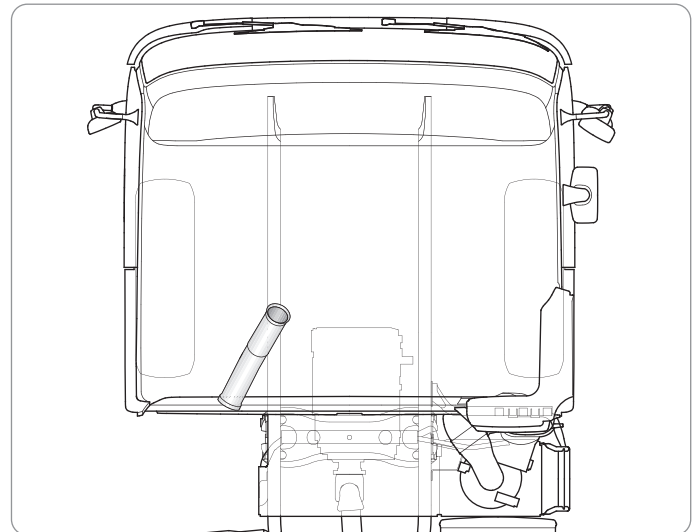
Disassembling the OE silencer

4. Before installing a SMF® or CSMF® system, an exhaust emissions test must be conducted.



The filter system may only be installed if the vehicle passes the emissions test. The copy of the exhaust emissions test report must be sent to HJS together with the installation certificate.

5. The modular SMF®/CSMF® system supplied by HJS replaces the original main silencer. The main silencer and associated accessories must be disassembled properly in line with technical requirements. The OE fastening materials and associated accessories must be reused.



Installing the SMF® / CSMF® system

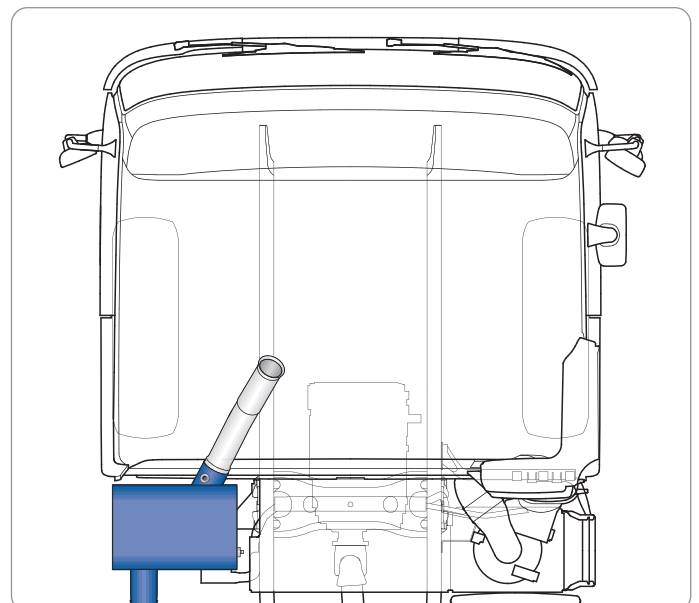
6. Install the modular SMF® / CSMF® system supplied by HJS using the OE fastening materials.

7. Position the modular SMF® / CSMF® system such that it does not come into contact with other vehicle assemblies.

8. Once adequate clearance from the vehicle body has been ensured, tighten all the bolts for the modular SMF® / CSMF® system.



Make sure the system is installed free from strain and that the connection to the existing exhaust system is secure and gas-tight.



Example of installation in Mercedes-Benz Actros



Installation Instructions

Installing the HJS Service Unit

9. The HJS Service Unit must be fitted in accordance with the relevant HJS documentation.

! The HJS ECU must be installed in the driver's cab and the HJS "ServiceCheck" display module positioned readily visible to the driver.

10. After installing the HJS Service Unit and connecting it to the modular SMF® / CSMF® system (pressure measuring point upstream of the filter and temperature sensor), carry out another exhaust emissions test.

! After successfully completing the emissions test, the copy of the exhaust emissions test report must likewise be sent to HJS together with the installation certificate.

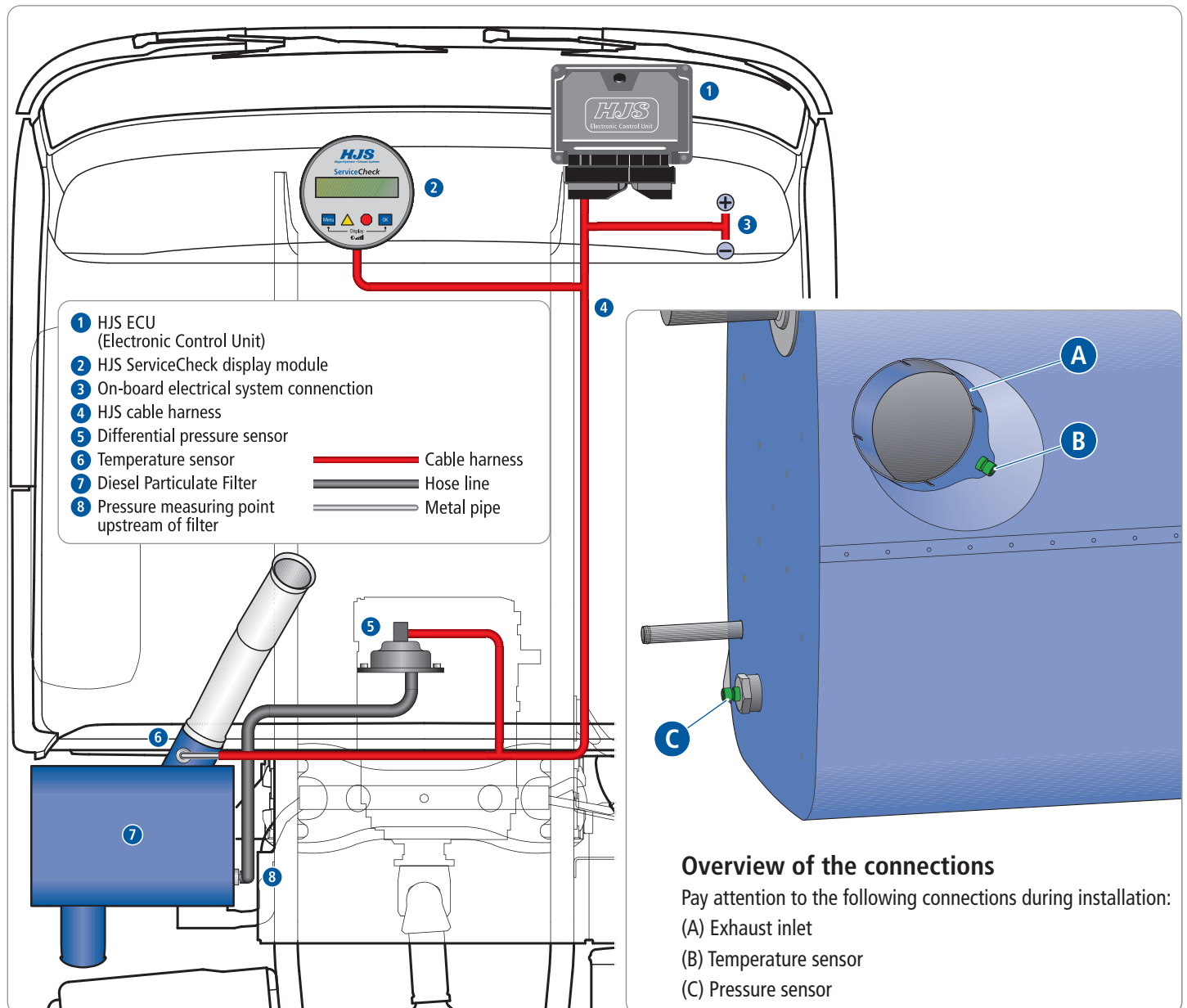
Final steps

11. Fill in all the details in the section entitled "Vehicle Data" of this document and keep them with the vehicle documents.

12. Complete the acceptance certificate (see section entitled "Acceptance Certificate") and distribute the various copies as follows:

- > Original acceptance certificate for vehicle registration office
- > 1st copy (yellow) Acceptance certificate for workshop
- > 2nd copy (blue) Installation certificate for vehicle owner
- > 3rd copy (pink) Installation certificate with copies of the exhaust emissions test report for HJS (These documents are the basis for any possible claims made under warranty)

13. Read the section entitled "Re-registering Toll Rates" for information on how to reduce the HGV tolls payable to Toll Collect when travelling in Germany.



Acceptance Certificate

You can find the original in the appendix.

ABNAHMEBESCHEINIGUNG

nach Anhang IV Anlage XXVII StVZO

über den ordnungsgemäßen Einbau eines genehmigten Partikelminderungssystems (PMS) zur Vorlage bei der Zulassungsstelle

1. Bestätigung über den ordnungsgemäßen Einbau (Nichtzutreffendes bitte streichen / Angaben nachtragen bzw. ankreuzen)

1.1 Vor dem Einbau des Partikelminderungssystems ist der technisch einwandfreie Zustand des Kraftfahrzeugs

☐ festgestellt worden.

☐ hergestellt worden.

1.2 Das unter Punkt 2 beschriebene Kraftfahrzeug wurde mit dem unter Punkt 3 benannten Partikelminderungssystem ausgerüstet. Der ordnungsgemäße Einbau aller Teile und die einwandfreie Funktion des Partikelminderungssystems werden hiermit bestätigt:

☐ einwandfreie Funktion

1.3 Vor dem Einbau des Partikelminderungssystems ist der serienmäßige Oxidationskatalysator auszutauschen.

☐ nicht erforderlich

☐ erforderlich und ist vorgenommen worden

2. Angaben zum Kraftfahrzeug

2.1 Amtliches Kennzeichen

2.2 Name und Anschrift des Fahrzeughalters

2.3 Fahrzeughersteller

2.4 Typ

2.5 Fahrzeug-Identifikations-Nr.

2.6 Datum der Erstzulassung

2.7 Stand des Wegstrecken- oder Betriebsstundenzählers

3. Angaben zum Partikelminderungssystem (PMS)

3.1 Hersteller des PMS

3.2 Typ Ausführung

3.3 Genehmigungsnummer

3.3.1 ☐ Abdruck der ABE für das PMS nach § 22 StVZO ist beigelegt.

3.3.2 ☐ Abdruck der BE nach § 21 StVZO für Einzelfahrzeuge ist beigelegt.

4. Angaben zu den Fahrzeugpapieren

4.1 Durch die Ausrüstung mit dem unter Punkt 3 beschriebenen Partikelminderungssystem erfüllt das Kraftfahrzeug die Anforderungen der nachfolgend aufgeführten Partikelminderungsstufe und ist in den Fahrzeugpapieren im Feld "Bemerkungen" wie folgt zu kennzeichnen:

☐ PMK 0

☐ PMK 1

☐ PMK 2

nachgerüstet mit Typ

KBA-Nr.

ab Datum

5. Ausführende Stelle (AU-Werkstatt oder Technische Prüfstelle)

Name und Anschrift

Kontroll-Nr. der anerkannten AU-Werkstatt

Ort, Datum

Stempel/Unterschrift der verantwortlichen Person
nach § 29 Abs. 12 oder § 47 a Abs. 3 StVZO

Original Abnahmebescheinigung für Zulassungsstelle
1. Kopie (gelb) Abnahmebescheinigung für Werkstatt
2. Kopie (blau) Einbaubescheinigung für Fahrzeughalter
3. Kopie (rosa) Einbaubescheinigung zur Rücksendung an HJS

Re-registering Toll Rates

Extract from press release dated 18/12/08,
"New toll rates from the start of next year"
(www.toll-collect.de)

With the new toll rates, trucks with air quality retrofit systems will pay considerably less than vehicles producing higher emissions. Vehicles in pollutant emission category S2, combined with PMK* 1, 2, 3 or 4 qualify for lower category C toll rates. Vehicles in pollutant emission category S3, combined with PMK* 2, 3 or 4, will pay category B toll rates.

In order to take advantage of the lower toll rates after a particulate filter has been fitted (air quality retrofit system), transport and logistics companies will need to re-register their heavy goods vehicles with Toll Collect. From 1st January 2009, all registered customers will be able to access the amended "Change Vehicle Data" form on the Toll Collect website. After it is completed and signed, the form must be returned to the Customer Service department (Address: Toll Collect GmbH, Customer Service, Postfach 11 03 29, 10833 Berlin, Germany). Once they have re-registered, transport companies will receive one new vehicle card for each registered vehicle without an On-Board Unit.

The "Change Vehicle Data" form also needs to be completed, signed and sent to Toll Collect for registered vehicles equipped with On-Board Units. Once these vehicles have been re-registered with Toll Collect, the

company will be receive written confirmation from the Customer Service department. Within 28 days of receipt of the confirmation letter, the re-registered vehicle must be taken to a Toll Collect Service Partner, where the new pollutant emission category data will be uploaded to the On-Board Unit. Once the On-Board Unit has been updated, the distance driven will be charged at the lower toll rates. Toll Collect will then send a new vehicle card to the company.

Until the re-registration process has been completed, drivers can either pay the toll at a toll-station terminal or the company can apply to the Federal Office of Goods Transport (BAG) for a refund of the excess toll paid.

If the toll is paid exclusively at toll-station terminals, drivers should enter the lower toll emissions category if the truck is categorized in Class S2 to S3 and has one of the required particulate reduction classes. For vehicles in pollutant emission category S2 in combination with PMK* 1, 2, 3 or 4, drivers should enter toll emissions category 3. For vehicles in pollutant emissions category S3 in combination with PMK* 2, 3 or 4, drivers should enter toll emissions category 4.





The pdf file entitled "Change Vehicle Data" can be downloaded from the "Forms" section under "Service" on the homepage of the Toll Collect website at www.toll-collect.de.

The form is available in German only ("Änderung Fahrzeugdaten"), but a "Guide to form completion" (pdf) is available in 25 European languages (see links at http://www.toll-collect.de/mautsystem/tcrdifr002-3_registrierung.jsp;jsessionid=E0D8FD7A7E0D7F1C83419D0928D96F6A).



1 Änderung Fahrzeugdaten für bei Toll Collect registrierte Fahrzeuge

2 Bitte füllen Sie dieses Formular vollständig aus. Verwenden Sie dafür den Computer, eine Schreibmaschine oder schreiben Sie gut leserlich in Druckbuchstaben. Bitte kreuzen Sie Zutreffendes an. Pflichtfelder sind mit * gekennzeichnet. Diese Felder sowie der die Änderung betreffende Sachverhalt müssen ausgefüllt werden.

3 Hat sich das amtliche Kfz-Kennzeichen oder das Nationalitätskennzeichen eines Fahrzeugs mit eingebauter OBU geändert, wenden Sie sich bitte ausschließlich an einen Servicepartner. Eine aktuelle Übersicht finden Sie unter www.toll-collect.de.

7 Benutzerdaten

8 Benutzernummer *

9 Firmenbezeichnung, Rechtsform gemäß Handelsregistereintrag *

12 Fahrzeugdaten

	ALT (bisherige Daten)	NEU (neue Daten)
13 Nationalitätskennzeichen *	<input type="text"/>	<input type="text"/>
14 Amtliches Kfz-Kennzeichen *	<input type="text"/>	<input type="text"/>
15 Fahrzeug-Identifikationsnummer (FIN, Fahrgestellnummer)	<input type="text"/>	<input type="text"/>
16 Anzahl der Achsen des mautpflichtigen Fahrzeugs (nur Zugmaschine)	(bitte kreuzen Sie die minimale Anzahl der Achsen Ihres Fahrzeugs an. Die Anzahl der Achsen finden Sie in der Zulassungsbescheinigung Teil I.) <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 andere: <input type="text"/>	(bitte kreuzen Sie die minimale Anzahl der Achsen Ihres Fahrzeugs an. Die Anzahl der Achsen finden Sie in der Zulassungsbescheinigung Teil I.) <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 andere: <input type="text"/>
18 Schadstoffklasse	(bitte kreuzen Sie die Schadstoffklasse Ihres Fahrzeugs an. Die Schadstoffklasse finden Sie in der Zulassungsbescheinigung Teil I.) <input type="checkbox"/> S1 <input type="checkbox"/> S2 <input type="checkbox"/> S3 <input type="checkbox"/> S4 <input type="checkbox"/> S5 <input type="checkbox"/> EEV Klasse1	(bitte kreuzen Sie die Schadstoffklasse Ihres Fahrzeugs an. Die Schadstoffklasse finden Sie in der Zulassungsbescheinigung Teil I.) <input type="checkbox"/> S1 <input type="checkbox"/> S2 <input type="checkbox"/> S3 <input type="checkbox"/> S4 <input type="checkbox"/> S5 <input type="checkbox"/> EEV Klasse1
27 Kombination aus Schadstoffklasse und Partikelminderungsklasse	(bitte geben Sie die Kombination aus Schadstoffklasse und Partikelminderungsklasse (PMK) an, wenn in Ihr Fahrzeug ein Rußpartikelfilter eingebaut ist.) 28a <input type="checkbox"/> S2 mit PMK 1 28e <input type="checkbox"/> S3 mit PMK 2 28b <input type="checkbox"/> S2 mit PMK 2 28f <input type="checkbox"/> S3 mit PMK 3 28c <input type="checkbox"/> S2 mit PMK 3 28g <input type="checkbox"/> S3 mit PMK 4 28d <input type="checkbox"/> S2 mit PMK 4	(bitte geben Sie die Kombination aus Schadstoffklasse und Partikelminderungsklasse (PMK) an, wenn in Ihr Fahrzeug ein Rußpartikelfilter eingebaut ist.) 28a <input type="checkbox"/> S2 mit PMK 1 28e <input type="checkbox"/> S3 mit PMK 2 28b <input type="checkbox"/> S2 mit PMK 2 28f <input type="checkbox"/> S3 mit PMK 3 28c <input type="checkbox"/> S2 mit PMK 3 28g <input type="checkbox"/> S3 mit PMK 4 28d <input type="checkbox"/> S2 mit PMK 4
19 Zulässiges Gesamtgewicht des mautpflichtigen Fahrzeugs (nur Zugmaschine)	(die Gewichtsangabe finden Sie in der Zulassungsbescheinigung Teil I.) <input type="text"/> kg	(die Gewichtsangabe finden Sie in der Zulassungsbescheinigung Teil I.) <input type="text"/> kg

20 Ich versichere, dass alle Angaben vollständig und korrekt sind. Ich bin mit der Speicherung meiner Daten für die Verarbeitung, Nutzung und die Reklamationsbearbeitung durch die Toll Collect GmbH einverstanden. Ich akzeptiere die Allgemeinen Geschäftsbedingungen (AGB) der Toll Collect GmbH. Die AGB sind im Internet unter www.toll-collect.de erhältlich oder können von der Toll Collect GmbH angefordert werden (Customer Service +49 180 2 222628 **).

21 Ort, Datum *

22 Unterschrift und ggf. Firmenstempel *

23 Bitte schicken Sie das Formular mit rechtsgültiger Unterschrift und Firmenstempel an folgende Adresse:

Toll Collect GmbH, Customer Service, Postfach 11 03 29, 10833 Berlin, Deutschland oder faxen Sie es an die Nr.: +49 180 1 222628 ***.

24 * Pflichtfeld

25 ** 0,06 € je Anruf aus dem Festnetz der Deutschen Telekom; Kosten für Anrufe aus dem Netz eines anderen Diensteanbieters oder aus den Mobilfunknetzen können abweichen.

26 *** 0,039 € je angefangene Minute aus dem Festnetz der Deutschen Telekom; Kosten für Anrufe aus dem Netz eines anderen Diensteanbieters oder aus den Mobilfunknetzen können abweichen.



Bundesamt
für Güterverkehr




Maintenance

General

> In addition to the combustible soot particles, the filter also collects ash residues that are formed when engine oil is burnt. Since this ash cannot be burnt off in the regeneration process, the modular filter module has to be cleaned.

> The HJS Service Unit monitors the rise in the exhaust backpressure constantly. When a predefined threshold is exceeded, the filter must be serviced, i.e. cleaned.

 Vehicles must be in perfect working order in order to ensure SMF® / CSMF® systems function properly:

Engine oil:	< 1% sulphate ash
Oil consumption:	< 1 litre/1,000 km
Sulphur content in fuel:	< 50 ppm

HJS Service Unit

Further information on installation and operation of the HJS Service Unit can be found in the relevant documents from HJS.

Requirements

- > **Cleaning facility** - washing station with oil separator
- > **Industrial high-pressure cleaner** - commercially available model
- > **Cleaning cover (for satellite model) from HJS** or
- > **Cleaning plate (for Jetfilter®) from HJS**
- > **Dust mask**

Requirements for the high-pressure cleaner

High-pressure cleaner

- > With max. pressure of 150 bar
- > With hot or cold water **without** chemical cleaning additives.

Parameters

- > Set the nozzle to a wide jet of water.
- > The minimum clearance that must be maintained between the nozzle of the cleaner and the filter is 15 cm.

Brief Overview of Maintenance

- > Remove the filter unit of the diesel particulate filter system.
- > Clean the filter unit as described in the cleaning instructions in the section entitled "Filter module maintenance (satellite type)" or "Filter module maintenance (Jetfilter®)" depending on the model of the SMF®/CSMF® system you have.
- > After reinstalling the filter unit, check that the diesel particulate filter system is properly sealed.
- > Document the maintenance procedure in the section entitled "Maintenance Record".



Engineered by HJS

Disposing of soot and ash



Cleaning the SMF® filter results in a mixture of water, soot and ash. This mixture must be disposed of via the oil separator!

Waste disposal codes for Germany, Austria and Switzerland:

13 05 02 Sludge from oil/water separators

13 05 06 Oils from oil/water separators

Filter module maintenance (satellite type)

1. Disassembling the housing

The filter module has to be disassembled before the filter can be cleaned. The following steps must be carried out:

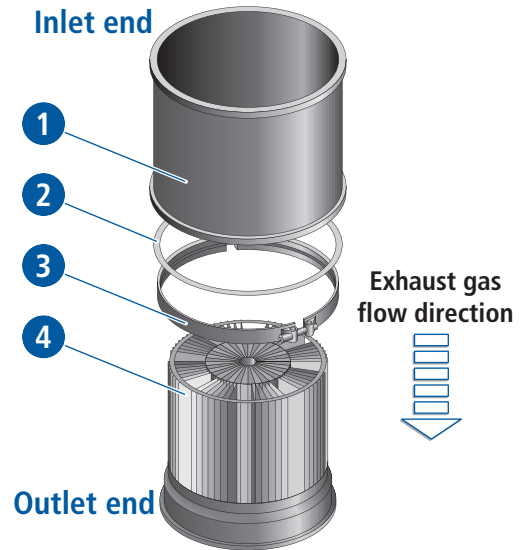


Wear a dust mask over your nose and mouth to avoid inhaling soot and ash!

- > Stand the filter module on its outlet end.
- > Undo the connecting clamp (3).
- > Pull the housing (1), together with the gasket (2) and clamp (3), off the SMF® / CSMF® filter (4).



NOTE: The SMF® / CSMF® filter may only be cleaned when the HJS cleaning cover is fitted!



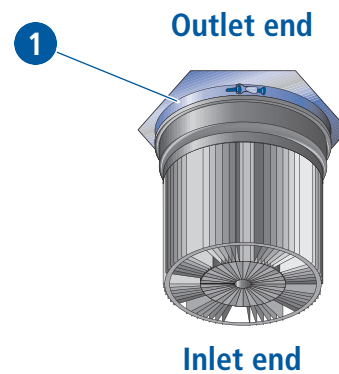
2. Mounting the cleaning cover

> When cleaning the SMF® sintered metal filter, always handle it with great care because improper handling and cleaning can cause permanent damage to the filter pockets.

- > Stand the SMF® filter on its inlet end.
- > Place the HJS cleaning cover (1) onto the outlet end and seal.



The following cleaning steps must be followed.



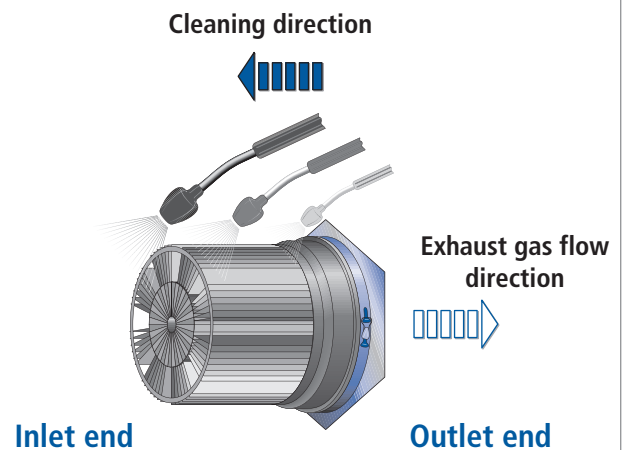
3. Cleaning step 1

> Lay the SMF® filter on its side and clean it by guiding the water jet in the opposite direction to that of the exhaust gas flow. Make sure you clean the spaces between the filter pockets.

- > **Rotate** the SMF® filter **carefully** and clean it all round.



NOTE: Make sure you observe the cleaning direction!

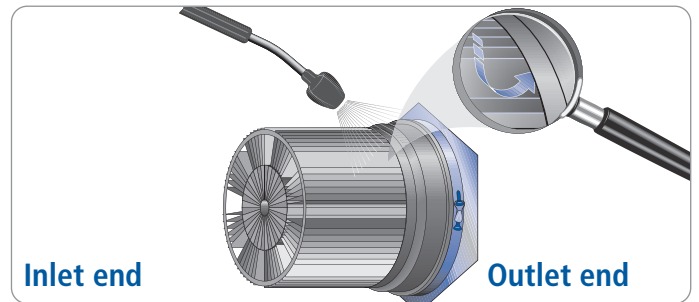


Filter module maintenance (satellite type)

4. Cleaning step 2

> Clean the SMF® filter aiming the water jet towards the outlet end in order to remove the soot and ash that is under the flange.

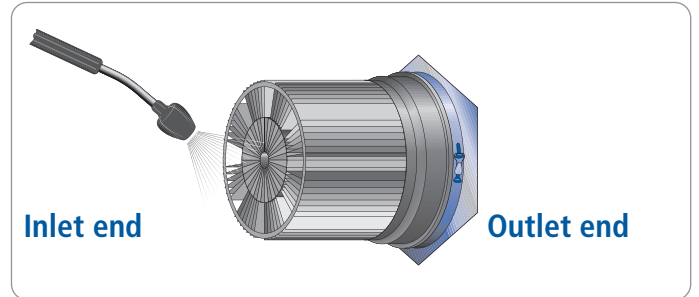
> **Rotate** the SMF® filter **carefully** and clean it all round.



5. Cleaning step 3

> Clean the SMF® filter from the inlet end.

> **Rotate** the SMF® filter **carefully** and clean the inlet area.

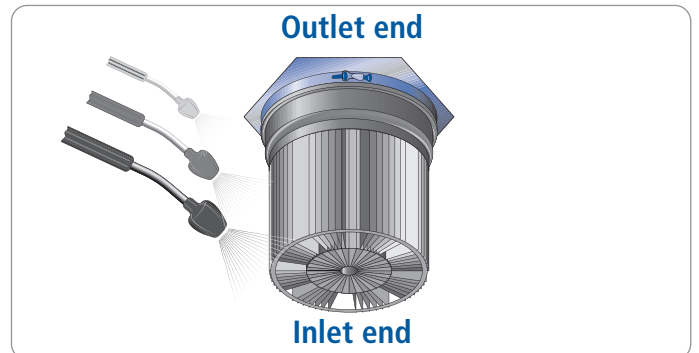


6. Cleaning step 4

> Stand the filter on its inlet end and clean it by guiding the water jet in the opposite direction to that of the exhaust gas flow.

> **Rotate** the SMF® filter **carefully** and clean it all round.

> Once you have finished cleaning the SMF® filter, disassemble the HJS cleaning cover from the filter.



7. Drying

> After completing the cleaning procedure, stand the SMF® / CSMF® filter on its inlet end and leave it to drip dry and then to dry in the air for a further 2 hours.



NOTE:

Avoid below-zero temperatures at all costs when cleaning and drying the SMF® / CSMF® filter!

8. Final assembly

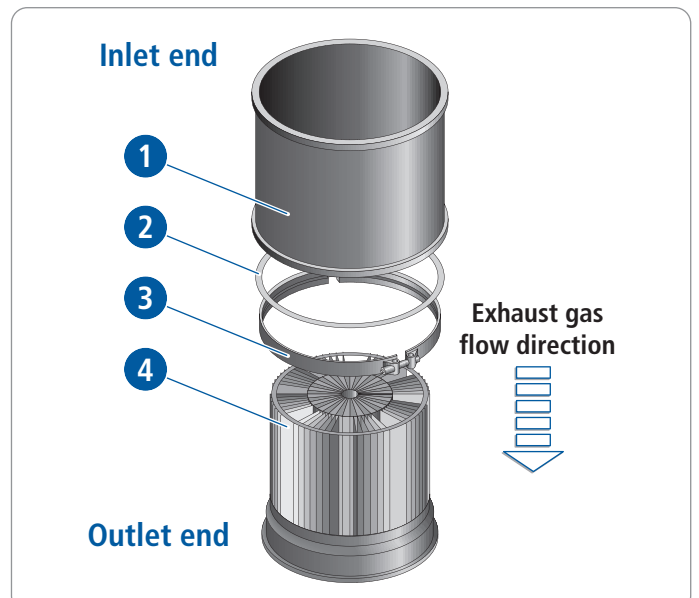
> Stand the SMF® filter on its outlet end.

> Position a new gasket (2) on the SMF® filter.

> Push the housing (1) onto the SMF® filter (4) (the housing fits in just one position).

> Fit the connecting clamp (3) and screws, using a rubber hammer to make sure the clamp sits properly. Then tighten the screws to 15 Nm.

> Install the SMF® filter with the new gasket in the particulate filter system.



NOTE:

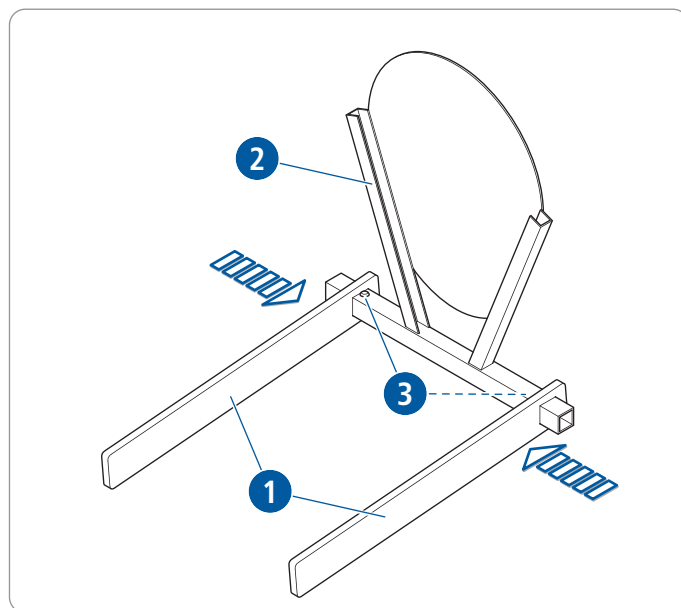
When installing the SMF® / CSMF® filter in the particulate filter system, make absolutely sure that the filter module is installed the right way round (exhaust gas flow direction)!



Filter module maintenance (Jetfilter®)

1. Assembling the cleaning plate

> Push the two support arms (1) onto the filter bracket (2) right up to the attachment points (3).



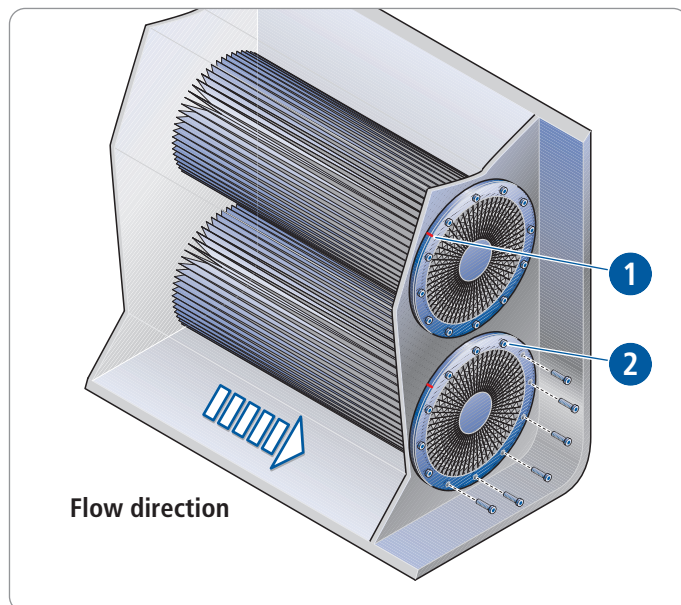
2. Disassembling the SMF® filter (1)



Wear a dust mask over your nose and mouth to avoid inhaling soot and ash!

> Before disassembling, mark the position (1) of the SMF® filter with some form of permanent marking, e.g. marking paint.

> Working at a suitable workplace (e.g. at a workbench), unscrew the 12 hexagon socket head screws (2).

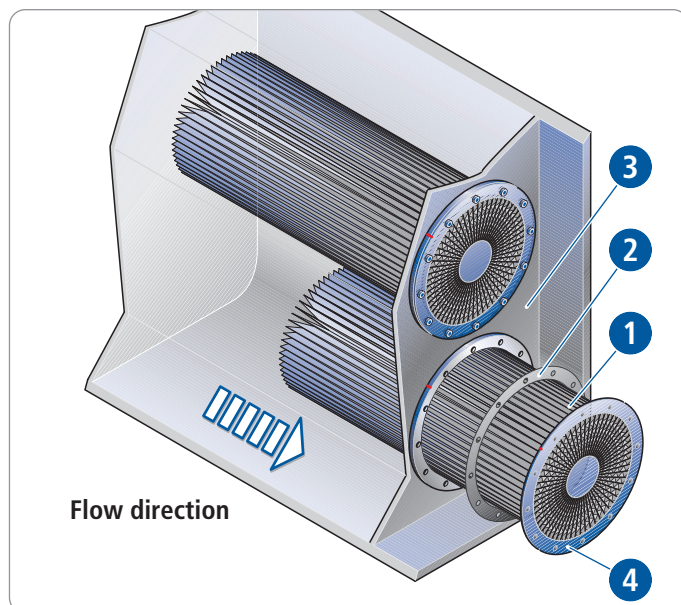


3. Disassembling the SMF® filter (2)

> Pull the SMF® filter (1) together with the gasket (2) carefully out of the filter housing (3) and put it down on the filter flange end to prevent it from becoming damaged.



Only ever carry the SMF® filter by its flange ring!
Make sure the filter pockets do not become damaged!





Filter module maintenance (Jetfilter®)

4. Mounting the cleaning plate



The SMF® filter may only be cleaned when the HJS cleaning plate (1) is fitted!

> When cleaning the sintered metal filter, handle it with great care. If the filter pockets of the SMF® filter are not handled or cleaned properly, the filter can suffer permanent damage. For this reason, the filter must be mounted on the cleaning plate.

> The cleaning plate (1) must be held firmly in place.

> Push the outlet end of the SMF® filter carefully into the cleaning plate (2).



The following cleaning steps must be followed!

5. Cleaning step 1

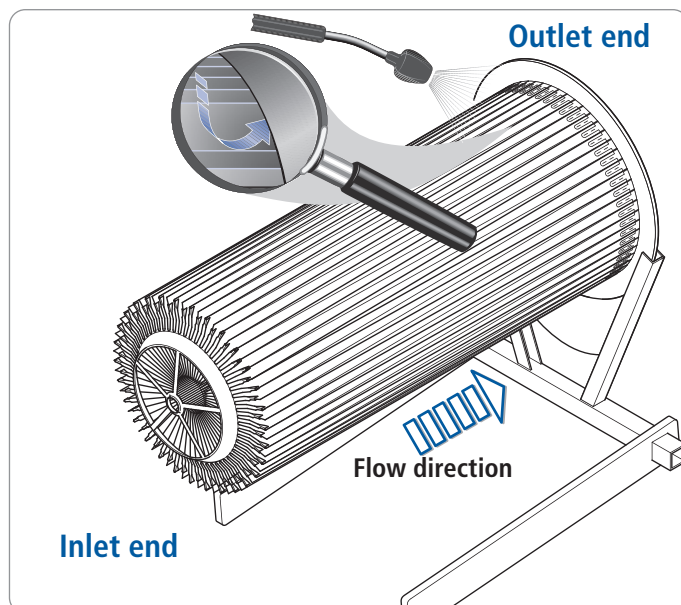
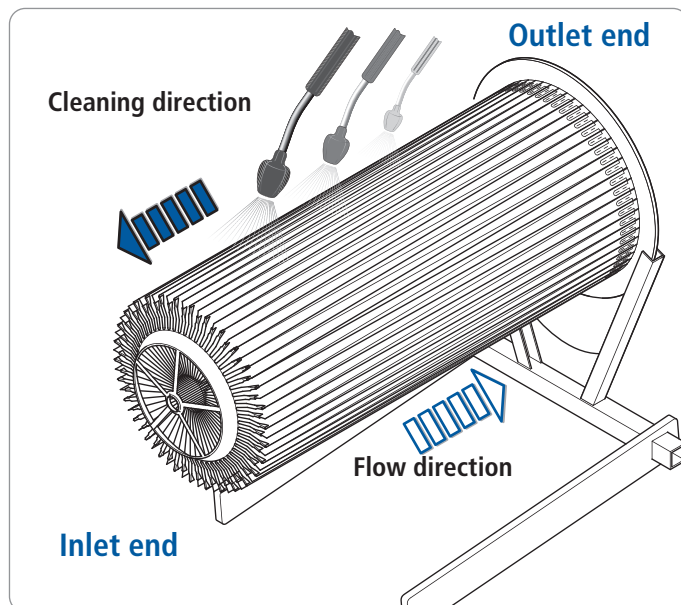
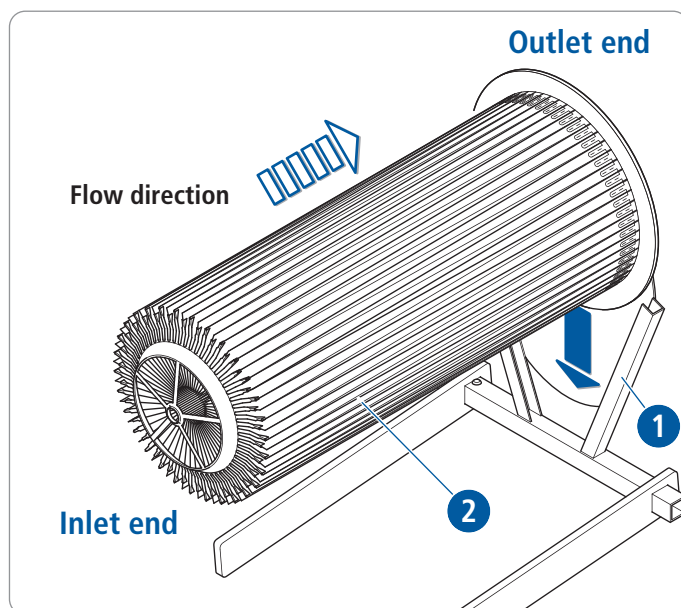
> Clean the SMF® filter by guiding the water jet in the opposite direction to that of the exhaust gas flow. Make sure you clean the spaces between the filter pockets.

> Rotate the SMF® filter carefully and clean it all round.

6. Cleaning step 2

> Clean the filter aiming the water jet towards the outlet end in order to remove the soot and ash that is under the flange.

> Rotate the SMF® filter carefully and clean it all round.

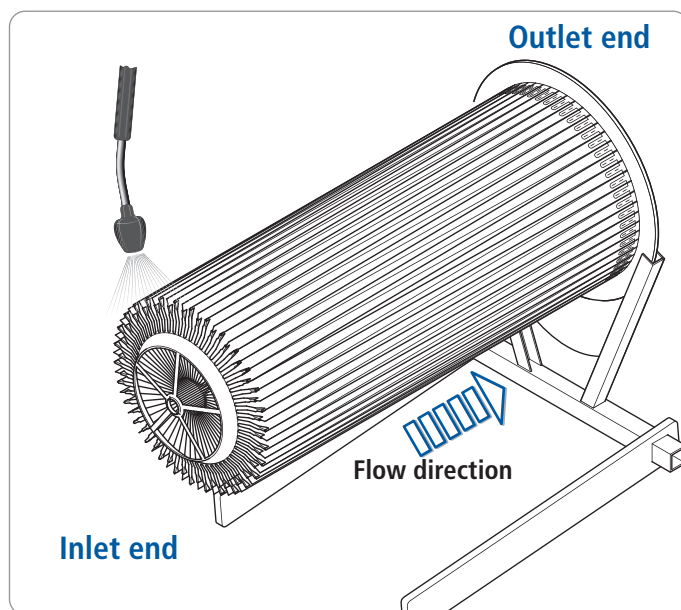


7. Cleaning step 3

- > Clean the inlet end of the filter.
- > Rotate the SMF® filter carefully and clean the inlet area of the end face.
- > Disassemble the cleaning plate. Observe the instructions in the section entitled "Mounting the cleaning plate".
- > After completing the cleaning procedure, leave the filter for approx. 2 hours to dry in the air.



NOTE: Avoid below-zero temperatures at all costs!



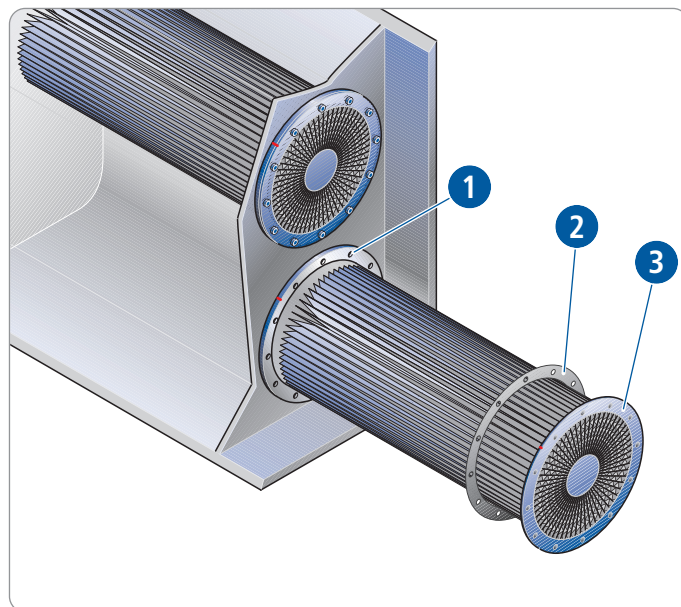
8. Installing the SMF® filter

- > Recut the thread on the filter housing (1) using a M6 x 1.25 tap.



Clean the mating surfaces before assembling!

- > Push the SMF® filter (3) together with the new gasket (2) carefully into the filter housing.

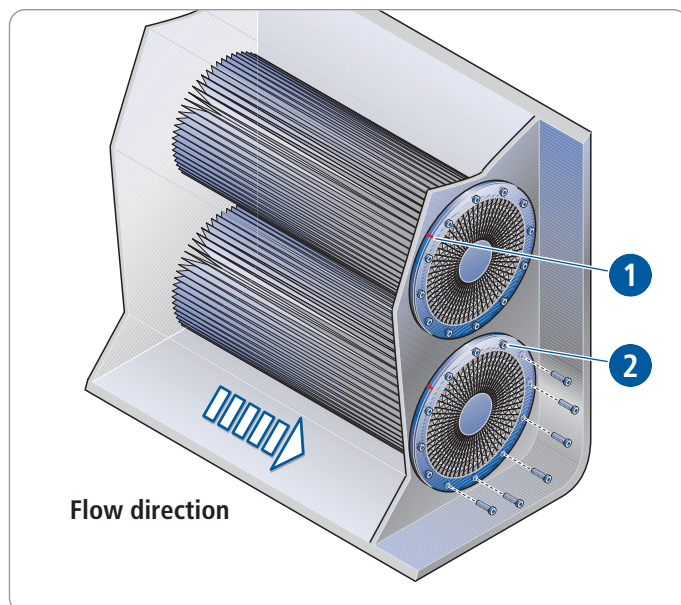


9. Final assembly of the filter housing



The markings (1) must coincide with one another when the components are put back together again!

- > Preassemble the SMF® filter together with the new (stainless steel) hexagon socket head screws (2) in the filter housing.
- > Tighten the hexagon socket head screws to a torque of 5 Nm and in diagonally opposite sequence.



Maintenance Record

Maintenance I	Mileage/Operating hours:	Date:
Remark:		
Name / Address of workshop:		
Name of fitter:	Stamp:	
Date:		
Signature:		

Maintenance II	Mileage/Operating hours:	Date:
Remark:		
Name / Address of workshop:		
Name of fitter:	Stamp:	
Date:		
Signature:		



Vehicle Data

Vehicle manufacturer:

Vehicle type:

Vehicle identification no. (VIN):

Registration date:

HJS ECU serial no.:

Installation date of SMF® / CSMF® system:



As a medium sized company based in Menden/Germany, HJS Fahrzeugtechnik GmbH & Co KG has more than 30 years experience and expertise in the field of exhaust-gas aftertreatment. Some 400 employees develop, produce and market modular systems for the reduction of pollutant emissions. These innovative environmental protection technologies can be used either for original equipment or for retrofitting in passenger cars, commercial vehicles and various non-road applications. In addition to systems for spark-ignition engines, HJS is particularly specialised in systems for diesel engines – especially for reducing soot particle and nitrogen oxide emissions. All systems meet the statutory requirements and are certified in accordance with the valid licensing regulations.

With its extensive range of patents for DPF® (Diesel Particulate Filter) and SCRT® (Selective Catalytic Reduction Technology), HJS sets benchmarks, both nationally and globally.



HJS Technology portfolio for OE- and Retrofit-Applications

- > Diesel Particulate Filter (DPF®)
Reduction of soot particle emissions
- > SCR-Systems
Reduction of nitrogen oxide emissions
- > SCRT®-Systems
Simultaneous reduction of soot particle and nitrogen oxide emissions

A clean future with HJS!