



KDF-V

Duplex filter

PN	10–64
DN	100–600
ANSI	4–24"
JIS	100–600
GOST	100–600



ISO 9001:2015



Application areas

The KDF duplex filter can be used in pressure and suction modes and is versatile for coarse and fine filtration. It is characterized by continuous filter operation during the cleaning phase. The filter combines so-called housing sizes (GR) with various nominal flange connection widths (DN).

KDF-V has a lid-combination lock and can also be delivered with screws and nuts as well as with a quick acting lever lock (medium-dependent – risk analysis required). Subsequent on-site retrofitting is also possible. A danger analysis has to be performed before start up acc. PED or applicable codes and standards.

Approvals

3.1. Certificate, DGRL/TÜV, GL, LS, DNV, ABS, TR TF/TR CU Certificates (EAC), Lloyd's Register Type Approval Certificate No. 16/20086

CE conformity evaluation according 2014/68/EU and marking according the directive.



Brief description and function

The duplex filter, comprises two identical single filters, connected via a valve-switching device to a filter side or can be operated in parallel. Medium to be filtered enters the filter basket from the top and flows through the insert inside out. Dirt thus remains in the filter element.

As a special version, the filter is also available with star filters (changed inflow).

Notice:

The compatibility between medium and vessel or sealing material is the responsibility of the operator.

The design of the pressure vessel is based on a quasi-static operation (load cycle number ≤ 1000 according to AD 2000 Merkblatt S1, section 1.4). Max. Differential pressure inlet - outlet 2 bar.

Safety instructions

Filters with lever locks are not suitable for the filtration of hazardous media (e.g. poisonous, inflammable or corrosive). In such cases, screws and nuts must be selected as lid closures. Generally, use of filter with switching valve must be checked for hazardous media. The use of KDF-V filters for gases requires a review by the manufacturer.

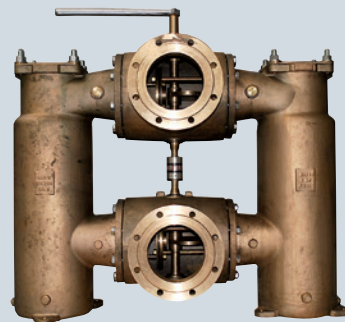
Check the filter for intended operation prior to usage. Conformity assessment as per PED 2014/68/EU must be done for changes in operating conditions or the media (kindly contact us for the same or run a risk analysis with conformity assessment).

Commissioning

- The pressure equalization line must be opened prior to commissioning.
- Check whether all screws and locks have been tightened properly.
- Check the position of the switching lever (here is an incised \perp on the shaft, which defines the direction of flow and/or shows "in operation" on the filter pot. The handle must be fitted accordingly).
- Both filter chambers shall be filled simultaneously by opening the switch device slowly to avoid fast pressure equalization of the empty chamber.
- Venting: The venting device fitted in the housing of each individual filter must be held open until fluid discharges. The filter is ready-to-operate after entering the single filter pot.
- Check whether the pressure equalization line is closed after commissioning.



KDF-V Stainless steel



KDF-V Bronze

Operation

Caution: Since it is a pressure vessel, it is important to ensure that the container is without pressure prior to beginning of maintenance.

1. As soon as the filter half is dirty (increasing differential pressure on the indicator or decreasing operating pressure in the system), the clean filter half is put into operation by gradual switching.
2. **Important:** The pressure equalization line must be opened before the switch-over. If this instruction is not followed, damage can occur during switching. After switching over the pressure equalization line close again.
3. Proceed with cleaning (removal of filter element) only after opening the venting device slowly and only after releasing the pressure from the chamber which shall be cleaned/ pressure equalization with atmosphere pressure the cover can be removed. While removing or releasing pressure constantly check if the switch has closed the chamber and that there is no leakage. In case of leakage the process has to be stopped and the filter isolated via IN/OUT valves.
4. After opening the drain plug and draining the remaining fluid from the container (filter side to be cleaned):

Caution: note maximum differential pressure of the filter (standard $D_p = 1$ bar)

Cleaning

The filter side to be cleaned must be depressurized (open vent carefully after switching over to the other filter side)

1. Then lift by loosening the filter cap or the screws and nuts of the lid of the filter half to be cleaned.
2. Note lid gasket integrity during assembly, replace if necessary.

Information: Hence, do not leave opened filters unattended and if required, keep an already cleaned reserve filter element ready for replacement.

Important information for switchover

For media having a corrosive effect on the material of the filter, switching must be actuated regularly (2–3 times) per week.

Filters are alternatively available in bronze, or in stainless steel SS316Ti or SS316.

Material/housing

DIN EN GJS-500-7 / (GGG-50/ASTM 80-55-06)
alternatively annealed GJS-400-18/(GGG 40.3)

Alternative materials

- RG 10 G-CuSn(10)5
- SS316Ti stainless steel
- Steel for example PGH 284, St 37.5 and others acc. ASTM

Heater

Filters may be additionally fitted with heaters for smooth start and continuous reduction in the viscosity of the medium to be filtered.

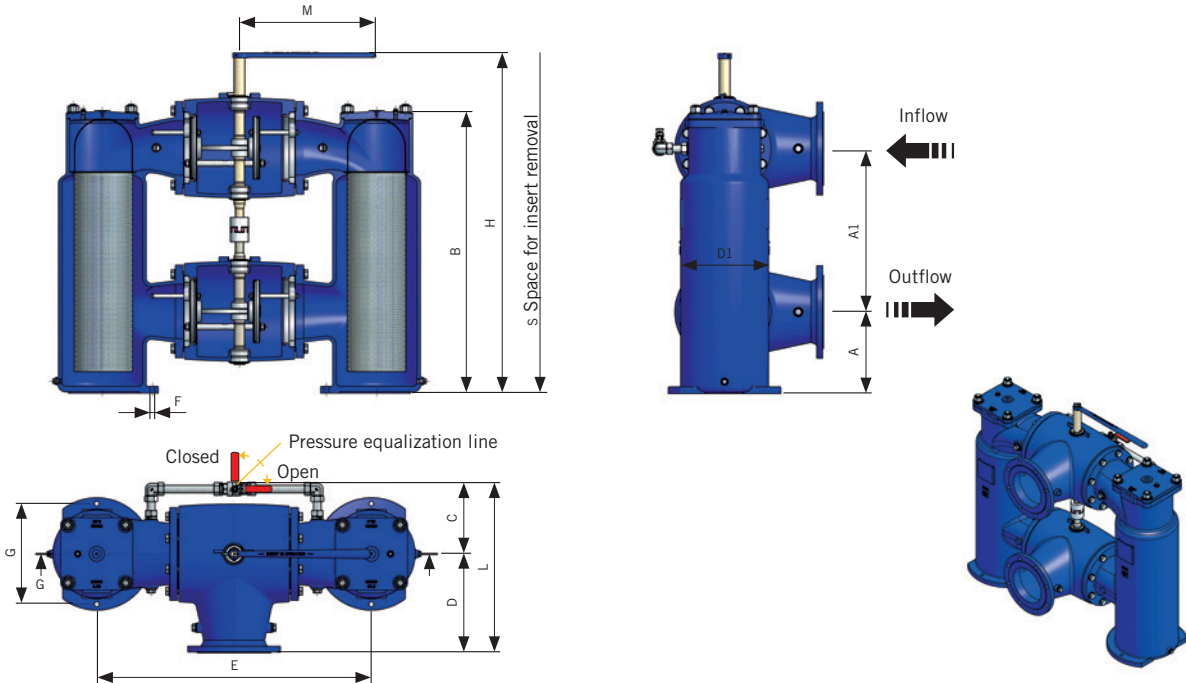
KDF-V options



- ① Cover with clamp
- ② Option Differential pressure indicator
- ③ Cover with screws and nuts

Technical data and dimensions¹⁾

Valve duplex filter (cast housing model)



Housing	Nominal flange connection width	Pressure stage		Ø D1	A	A1	B	C	D	F	G
Size	DN	Lock	Screws							Ø	Foot bolt circle
	mm	bar	bar	mm	mm	mm	mm	mm	mm	mm	mm
7	100	10	16	262	265	435	840	260	250	18	290
	125	10	16	262	265	435	840	260	250	18	290
	150	10	16	262	265	435	840	260	250	18	290
8	150	10	16	325	300	600	1.037	268	362	18	375
	200	10	16	325	300	600	1.037	268	362	18	375
	250	10	16	325	300	600	1.037	268	362	18	375
10	300	–	16	469	400	700	1.359	400	410	23	560
	350	–	16	469	400	700	1.359	400	410	23	560
11	400–600	Size on request									

Housing	Nominal flange connection width	S	H	L	M	Flow rate	Contents	Filter area ²⁾		Weight	
Size	DN	Filter removal height	Lock height	Screws height	Overall length	Lever length	for 2,5 m/s	Basket strainer	Ring strainer		
	mm	mm	mm	mm	mm	mm	m ³ /h	L	cm ²	cm ²	kg
7	100	1.550	1.150	1.000	510	500	70	105	3.030	4.370	380
	125	1.550	1.150	1.000	510	500	110	105	3.030	4.370	382
	150	1.550	1.150	1.000	510	500	160	105	3.030	4.370	388
8	150	2.000	1.400	1.250	642	500	160	205	4.830	5.780	550
	200	2.000	1.400	1.250	642	500	280	205	4.830	5.780	555
	250	2.000	1.400	1.250	642	500	440	205	4.830	5.780	562
10	300	2.650	–	1.500	815	930	635	225	7.200	8.920	1.150
	350	2.650	–	1.500	815	930	635	225	7.200	8.920	1.150
11	400–600	Size on request									

* Dimensions only for information – certified dimensions in approved Krone Filter Solutions installation drawing.

¹⁾ Dimensions for welded filters differ. ²⁾ Modification possible by means of larger filter pots.

Technical data

Technical data		
	Standard version	Special version and/or additional features
Filter element	Basket strainer insert	Dual strainer, star strainer, sleeve strainer
Filter unit	25–1000 µm: Fabric with support plate, 1 mm onwards: Perforated plate, 1 mm onwards: Perforated plate with round hole	Filter element 25–2.000 µm, 1–10 mm
Filter cap	Stud screws and nuts	Lock
Venting device	Screw	Ball valve
Draining device	Screw	Ball valve
Connection	Flange as per EN 1092-1 11B Flange position: as against the height	ANSI, JIS, as per customer specification, GOST
Materials		
Housing and lid	DIN EN GJS-500-7/(GGG-50/ASTM 80-55-06)	RG 5/10/G-CuSn(10)5ZnPb GGG-40.3/EN GJS 40-18 1.4571/316Ti steel 1.4404/316L steel
Lid gasket O-ring	NBR	FPM, EPDM, PTFE
Perforated plate/fabric	SS316Ti, SS304	SS316Ti, SS304, SS316L, Alloys, Titanium
Venting	Stainless steel screw 1/4"	Brass, ball valve, as per specification
Extras		
Additional filter	–	Magnetic filter element
Heater	–	Steam, oil, hot water or electric heating
Zinc protection	–	For sea water filter
Differential pressure indicator	–	Optical, electrical, contacts
Body/Cover		
Surface treatment		
Internal	Anti-corrosion primer or untreated	Anticorrosion oil, epoxy resin coating, rubber coating
External	Synthetic resin coating RAL 5010	RAL as per specification
Design/Certification		
	Declaration of Conformity, 3.1 Material Certificates – Lloyds Register certified foundry acc. to DGRL 2014/68/EU	On request

Accessories

We produce and deliver additional design and material variants on request. We solicit your request.



Magnetic piston pressure gauge for differential pressure



PN 64/DN 150



DN 500/20"



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SOLUTIONS IN FILTRATION

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Krone Filter Solutions GmbH
Address	Industriestr. 19, Oyten, 28876, Germany
Type	Automatic self-cleaning and basket filters
Description	Single, duplex and self-cleaning automatic filter with several housing sizes and combinations made from standard materials spheroidal iron castings EN-GJS-500-7 (GGG 50)* or EN-GJS-400-15 (GGG 40), carbon steel optional rubber lined or stainless steel.
Trade Name	KSF, KMF, KDF-K, KDF-V, KAF, KAF-S, KAF-G, KRF
Application	Filter depending on type for diesel oil, oil or water piping systems in ship and offshore installations classed or intended for Classification with Lloyd's Register.
Specified Standard	Lloyd's Register Rules and Regulations for the Classification of Ships, July 2021
Other Conditions	The manufacturer's installation instructions are to be sought. *) Not to be used for applications with expected significant chock or vibration loads.



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Type Approval Certificate

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 16/20086

The Design Appraisal Document HTS/ENS 34963-16, Issue 1 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Appendix

RATINGS	Filter type:	Nominal pressures: [bar]	Size range:	Material:
KSF		6, 10, 25	DN 15 – DN 600	Spheroidal iron casting
KMF		6, 10, 25	G ½” – 2 ½”	Spheroidal iron casting
KDF-K		6, 10, 25	DN 15 – DN 250	Spheroidal iron casting
KDF-V		6, 10, 25	DN 100 – DN 600	Spheroidal iron casting, carbon steel
KRF		6, 10	DN 32 – DN 400	Spheroidal iron casting, carbon steel
KAF		6, 10	DN 50 – DN 1000	Spheroidal iron casting, carbon or stainless steel,
KAF-S		6, 10	DN 50 – DN 1000	Spheroidal iron casting, carbon or stainless steel,
KAF-G		6, 10	DN 50 – DN 1000	Spheroidal iron casting, carbon or stainless steel,

Material:	Temperature range:	For fluids**:
Spheroidal cast iron	-10 up to +300°C	MDO, HFO, oil, water, seawater
Austenitic stainless steel: 1.4571, 1.4401, 1.4404, 1.4408, 1.4539, 1.4301, 1.4541, SA240-304L, SA240-316Ti, SA240-321, SA240-316L, SA240-904L,	-196 up to +300°C	MDO, HFO, oil, nitrogen
Duplex stainless steel: 1.4462, 1.4463, UNS S31803	-40 up to +250°C	seawater
Super duplex: 1.4410, UNS 32750		
Carbon steel: St 50, P235GH, P245GH, P250GH, P265GH, SA516 Gr60, SA516 Gr70	-40 up to +100°C	MDO, HFO, oil, water, seawater

**) including fluids and mixture of similar evaluation class

Pressure reductions at elevated temperatures are to be considered.

Media depending on type: KAF, KAF-S, KAF-G, KRF: water, seawater

KSF, KMF, KDF-K and KDF-V: MDO, oil, nitrogen, water, seawater

LLOYD'S REGISTER TYPE APPROVAL – DESIGN APPRAISAL DOCUMENT

Issued by: Hamburg Technical Support Office (HPC 1461050)

Issued to: KRONE FILTER SOLUTIONS GMBH

For: SINGLE, DUPLEX AND AUTOMATIC FILTER

Types: KSF, KMF, KDF-K, KDF-V, KAF, KAF-S, KAF-G, KRF

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System Procedure TA14 Version 04 (September 2020) and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

-	Application Checklist	19.05.2021
16/20086	Previous Type Approval Certificate	09.09.2016
-	Product Catalogue / general Data sheets for types KSF, KMF, KDFK, KDFV, KDF and KRF	2014
KSF LR Data sheet, Rev. 4	KSF	2016
KSF080.04.16.00.01, Rev. 0	AW 613 PN16 DN 80 incl. Parts list	22.04.2008
KSF80.04.16.01.01, Rev. 1	Body DN 80 GR4	10.03.2006
KSF000.05.16.02.01, Rev. 0	Cover GR5	25.03.2009
KMF LR Data sheet, Rev. 4	KMF	2016
KMF000.03.05.16.00.01, Rev 0	KMF GR3 incl. Parts list	22.11.2013
KMF000.03.05.16.01.01, Rev 0	Body KMF GR3 / GR1 ½" – G2"	22.11.2013
KSF000.03.05.16.02.01, Rev.1	KSF Cover GR3	24.11.2011
KDFK LR Data sheet, Rev. 4	KDFK	2016
KDFK080.06.05.10.00.01, Rev. 0	KDFK DN 80 PN 10 incl. Parts list	24.02.2011
KDFK080.04.05.10.01.02, Rev.2	KDFK Body GR4 DN 80 PN10 JIS 10K	20.03.2014
KSF000.06.10.02.01, Rev. 0	Cover GR6	31.03.2009
KDFK250.07.05.10.00.01	KDF-K Double filter DN 250 PN 16	23.10.2019
KDFK250.07.05.10.01.01	KSF Body DN 250 PN 10 Gr. 7	23.10.2019
KSF00.08.05.10.02.01, rev. 1	Cover KSF Gr.8	01.04.2009
KDFV LR Data sheet, Rev. 2	KDFV	2016
KDFV150.07.05.10.00.20, Rev 1	KDFV GR7 DN 150 incl. Parts list	12.07.2012
KDFV150.07.05.10.01.20, Rev 1	KDFV Body GR7 DN 150	27.04.2012
KDFV150.07.05.16.08.20, Rev 4	KDFV Body Change Over GR7 DN 150	12.07.2012
KSF000.07.05.10.02.01, Rev. 0	Cover GR7	24.02.2011
KAF LR Data sheet, Rev. 0	KAF	2016
KAF150.01.16.05.00.01, Rev. 0	KAF DN 150 PN5 JIS B 2220 K5 FF incl. Parts list	16.05.2014
KAF150.00.05.05.01.02, Rev. 0	Body KAF DN 150 PN5	16.05.2014
KAF150.00.16.05.01.02, Rev. 0	Body KAF DN 150 PN5 rubber lined incl. Parts list	16.05.2014
KAF150.00.05.10.02.01, Rev. 0	KAF Cover DN 150 PN 19 / DNC-50	12.12.2013
KAF150.00.16.10.02.01, Rev. 0	KAF Cover DN 150 PN 19 / DNC-50 incl. Parts list	12.12.2013
KRF LR Data sheet, Rev. 4	KRF-BF	2016

TEST REPORTS

-	Production Quality Assessment in Oyten	30.06.2021
HPC1461050/01	LR Works Inspection including hydrostatic burst pressure tests at 100 bar for type KSF: DN 50, size 2; KSF: DN 80, size 4 and KSF: DN 100, size 8	14.12.2015
HPC1461050/02	hydrostatic burst pressure tests at 100 bar for type KMF: 2 ½" size 4; type KDF-K : DN 80, size 6 and KDF-K: DN 20, size 2 witnessed by LR Surveyor at Krone in Oyten	17.12.2015
HPC1461050/03	hydrostatic burst pressure tests at 40 bar for type KAF: DN 200, PN 10 and at 64 bar for type KDF-V: DN 150, size 7, PN 16 witnessed by LR Surveyor at Krone in Oyten	21.12.2015
HPC1461050/04	Visit of an existing installation with function test of KAF self-cleaning automatic filter at 'Elbphilharmonie Hamburg'	11.01.2016



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Supplementary Type Approval Terms and Conditions

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