KMF

Sleeve basket filter

PN	10–16
G	½–2½"
GR	0.5–4

Lloyd's Register
Design Appraisal Certificate no. HPC1461050/34963-16/TS

Lloyd's Register
Type Approval Certificate no. 16/20086

DEKRA
ISO 9001:2015

Filter gemäß ÖNORM
ÖNORM H 5195-1

Applications

The KMF filter is a versatile strainer basket filter for gaseous and liquid media made from GGG-50 (nodular graphite) in accordance with EN-GJS-500-7 or from Rg 10, (special version). It is characterized by high performance, low weight and space-saving design, as well as an extremely easy, fast cleaning.

- **Flexible combination of housing sizes, filter surfaces and connecting sleeves.**
  Six housing sizes can be supplied with different connecting sleeves, which ensures adaptation to the operating requirements and dirt loads.
- **Variable filter surface selection.**

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.

Germanischer Lloyd · Lloyd's Register · DNV·GL · ABS · TR TF EAC · Lloyd's Register

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Brief description

The filter consists of a cast housing with opposing connecting sleeves of equal height. The filter cover is alternatively fastened with stud bolts and nuts or with a clamp. The venting device in the cover and drain device in the housing are included in the scope of supply.

- **Quick-acting clamp for cleaning the strainers.**

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 1 bar.

Filter media

Alternatively the filter can be equipped with a basket strainer, ring or other inserts. For example the filter insert consists of perforated plate, which is optionally spanned with mesh of different widths. The medium to be filtered flows through the strainer insert from the inside to the outside. The particles remain in the strainer and can be removed with the strainer.

Safety instructions

Do not use the filter with clamp closure for filtering of hazardous media (e.g. toxic, flammable, or caustic media) and gases or vapors! In these cases select bolts and nuts for the cover closure. Prior to using the filter verify the intended use. If there are changes in operating conditions or the medium then a conformity evaluation in accordance with PED EN 2014/68/EU must be carried out (for this please contact us as the manufacturer or execute a hazard analysis with conformity evaluation).

Installation

Installation in pipes is done by the means of sleeve connections. Ensure that the standard version of the filter is installed vertically and mechanically tension-free without additional loads. The medium must flow in the direction specified on the housing. Incorrect installation can cause filter malfunctions and damage the inserts.

Commissioning/operating instructions

1. Open the venting device until liquid escapes.
2. Close venting device.
3. Filter is ready for operation.

Attention:
Since this is a pressure vessel make absolutely sure that the filter is depressurized before starting maintenance tasks. Follow the safety and accident prevention guidelines required for the medium.

Cleaning

1. Relieve the pressure on the filter by means of the venting device and drain device.
2. Loosen the filter closure and lift off the cover.
3. Drain the filter via the drain device to a level that is at least below the strainer support.
4. Pull the strainer insert upward and out of the filter housing. The strainer can now be cleaned by carefull blowing it out or blasting it with compressed air, steam, or water. If necessary the strainer must be soaked and cleaned in a suitable cleaning agent. In some circumstances optimum cleaning is achieved by means of ultrasonic bath. For all cleaning types ensure that the filter mesh is not damaged.
5. When assembling the filter in the reverse sequence, check the sealing elements for wear and replace them if necessary.

Maintanance & Inspections

A single basket filter does not have a high grade of maintenance. Nevertheless the filter shall regularly be visually inspected from the outside during regular shift maintenance on site. Recommendation for visual inspection is 1 time per month. The filter has to be cleaned acc. site requirements and present grade of impurities (see position: cleaning).
During the removal of the basket the filter vessel and insert shall be visually inspected and both insert and vessel cleaned if necessary.
Minimum 1 visual inspection from inside per year is mandatory in operation, an inspection every 6 months is recommended.

Recommendation:
All gaskets shall be replaced with new gaskets for safety in operation. Old gaskets can pose a danger of leakage and may damage equipment.
Filter insert shall regularly be changed for a new one, recommended is a change after 3 years of operation as minimum.
Optional rubberlined surfaces shall regularly be inspected for superficial damages, recommended is an inspection every 6 months, minimum 1 time per year. Damages shall immediately be repaired acc. manufacturer repair procedure for rubberlining. Operator shall handle rubberlined filters with care and avoid mechanical damage of lining.
During special maintenance (Shutdown of plants or Yard stays) on heavy duty applications a spark test of rubberlining is recommended. The manufacturer shall be contacted for details before performing it to check suitability of test equipment.

Reparable ITEM´s of filter

The filter has no repairable items, damaged parts shall be replaced. Its recommended to change gaskets after disassembly of the gasket area.

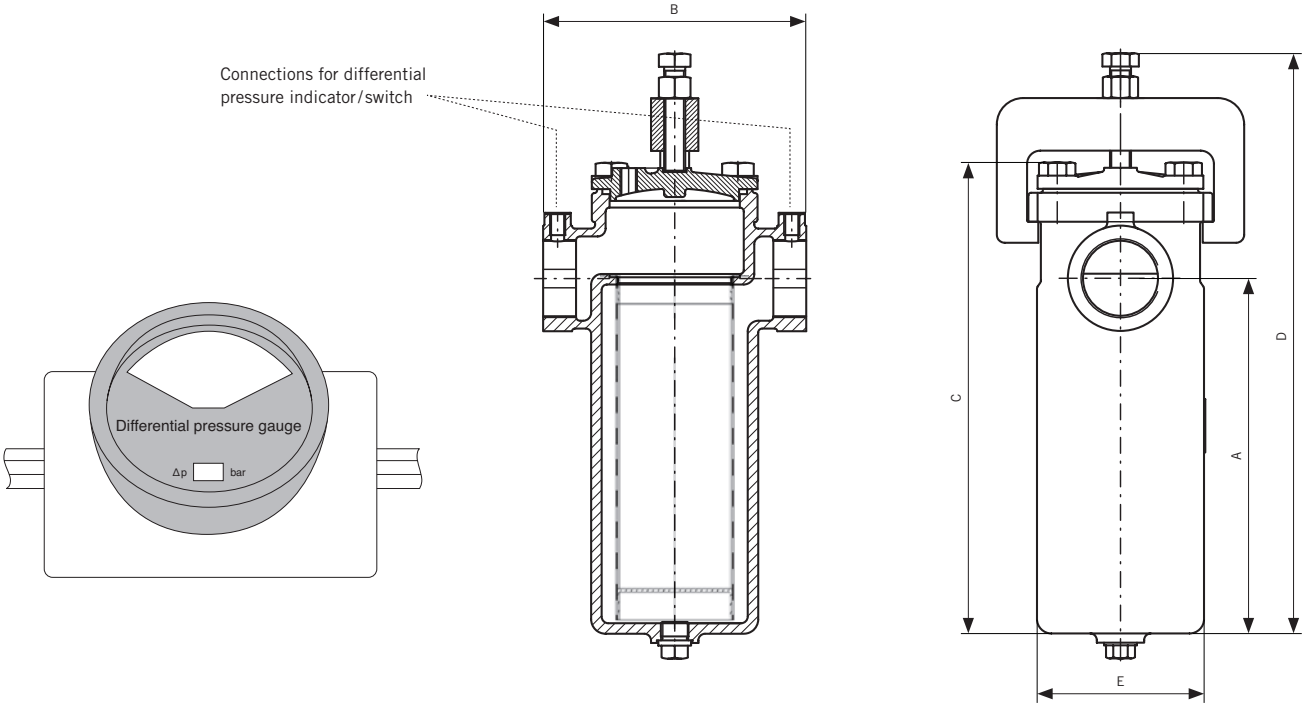
Disposal Plan

No harmful substances or asbestos are used as material of construction.
The filter has stainless steel and therefore regenerable inserts which can be cleaned by appropriate means and following safety instructions of media retained in inserts. Operator shall follow safety instruction of filtered media during cleaning.
Damaged filter insert shall be disposed acc. local regulations for stainless steel metallic waste (fully recyclable) after cleaning. To high differential pressure dirty before cleaning may damage the fine mesh if installed. A dp over 0.5 bar is not recommended.
Rubber and synthetic materials (plastic) shall be disposed acc. local regulations, Gaskets are NBR or Aramid fibers reinforced NBR and shall be disposed acc. applicable local regulations.

Storage plan

Goods not installed shall be stored in dry place without UV radiation and protected from humidity from temperatures in a recommended range of +5 to +45°C. Recommended shelf time 5 years due to gasket lifetime. Goods stored shall be inspected visually acc. storage conditions on regular basis. Minimum yearly visual inspection (outside/inside) is recommended.
Flanges and all openings shall be closed during storage. Wrapping of items into plastic in storage is not environmentally recommended and also may lead to condensation on metal surface of filter and surface corrosion. Covering of goods is preferred in storage with breathable material (fabric). Drying agent use is recommended.

Technical data and dimensions



	Nom. diameter	Vessel design pressure		E	A	B	C	D	Flow rate	Volume	Filter surface area		Weight
		Clamp	Bolts	Ø			Clamp	Bolts	2.5 m/s		Basket strainer	Ring strainer	
		bar	bar	mm	mm	mm	mm	mm	m³/h	L	cm²	cm²	approx. in kg
GR 0.5	G 1/2	10	16	80	153	160.5	208	259	3	0.6	150	195	4.5
	G 3/4	10	16	80	153	160.5	208	259	3	0.6	150	195	4.5
	G 1	10	16	80	153	160.5	208	259	4.5	0.6	150	195	4.5
GR 1	G 1/2	10	16	127	150	230	261	326	3	2	260	390	10
	G 3/4	10	16	127	150	230	261	326	3	2	260	390	10
	G 1	10	16	127	150	230	261	326	4.5	2	260	390	10
	G 1 1/4	10	16	127	150	230	261	326	7	2	260	390	10
	G 1 1/2	10	16	127	150	230	261	326	18	2	260	390	10
GR 2	G 1/2	10	16	127	208	230	308	384	3	2.5	485	730	12
	G 3/4	10	16	127	208	230	308	384	3	2.5	485	730	12
	G 1	10	16	127	208	230	308	384	4.5	2.5	485	730	12
	G 1 1/4	10	16	127	208	230	308	384	7	2.5	485	730	12
	G 1 1/2	10	16	127	208	230	308	384	18	2.5	485	730	12
GR 3	G 3/4	10	16	127	268	230	379	444	3	3	560	840	14
	G 1	10	16	127	268	230	379	444	4.5	3	560	840	14
	G 1 1/4	10	16	127	268	230	379	444	7	3	560	840	14
	G 1 1/2	10	16	127	268	230	379	444	12	3	560	840	14
	G 2	10	16	127	268	230	379	444	18	3	560	840	14
	G 2 1/2	10	16	127	268	230	379	444	30	3	560	840	14
GR 3.5	G 1 1/2	10	16	127	316	230	418.5	507	12	3.7	690	1.150	16
	G 2	10	16	127	316	230	418.5	507	18	3.7	690	1.150	16
	G 2 1/2	10	16	127	316	230	418.5	507	30	3.7	690	1.150	16
GR 4	G 1 1/2	10	16	127	393	230	504	569	12	4.2	870	1.300	18
	G 2	10	16	127	393	230	504	569	18	4.2	870	1.300	18
	G 2 1/2	10	16	127	393	230	504	569	30	4.2	870	1.300	18

Technical data

Technical data		
	Standard version	**Special version or supplemental equipment**
Filter insert	Strainer insert	Ring type strainer insert, Double strainers, cartridges, slot wedge wire, star pleated strainer
Filter mesh	10–1,000 µm (microns) Stainless steel mesh, 1,0–10 mm perforated plate	5 µm, square perforation, braid, cartridges, pleated mesh
Filter cover	Bolts and nuts	Clamp. Housing with clamp already predrilled for stud bolts – modification by customer possible.
Venting device	Bolt	Ball valve/Flange
Draining device	Bolt	Ball valve/Flange
Connection	Pipe female thread, Withworth	With welded-on ends
Materials		
Housing and cover	GGG-50, DN 1693 DIN EN 1563 or EN GJS-500-07	Rg 10, GGG-40.3 (EN GJS-400-18)
Cover seal	NBR	FPM, EPDM, MPQ, PTFE
Perforated plate/mesh	1.4301/1.4401	1.4571/1.4401, Ms/Bz, Hastelloy C 4, various plastics
Extras		
Additional filter	–	Magnetic filter insert
Heater	–	Customized heating connections
Zinc protection	–	For sea water filters
Differential pressure indicator	Connection possibility G ¼"	Optical, with electric contacts
Housing surface treatment		
Inside	Anti-corrosion primer	Untreated, anti-corrosion oil, epoxy resin, Chemonit 33 (rubberlined), E-CTFE, Levasynt
Outside	Epoxy paint RAL 5010 blue	Epoxy resin, E-CTFE, Levasynt, RAL acc. specification
Design/Certification		
	Declaration of Conformity – Lloyds Register certified foundry acc. to DGRL 2014/68/EU	3.1. Certificate, DGRL/TÜV, GL, LS, DNV, ABS, LR TA type approval, TR TF/TR CU Certificates (EAC) or on request

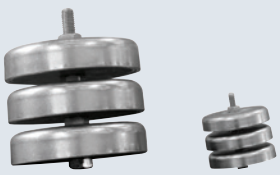
Accessory

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

KMF with Dp indicator

KMF with clamp quick closure/ opening

Differential pressure indicator
http://www.krone-filter.com/product.php?id=13



Magnetic inserts
http://www.krone-filter.com/product.php?id=19

Overview of our Filter Types

Self cleaning filter

- KAF® Self cleaning Bernoulli®-filter
- KAF-G
- KAF-S
- KRF Backflush-filter
- KAS Scraper filter

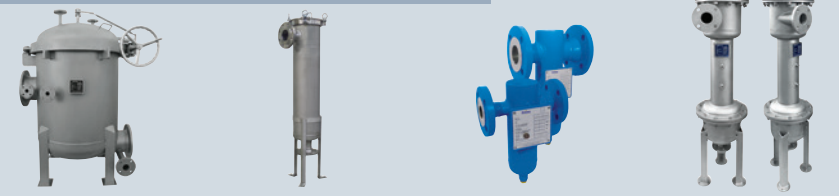
Single filter

- KSF® Single basket filter (flanged)
- KMF Threaded basket filter
- KWF Welded/custom made basket filter
- KWF-Inline Inlet flange and outlet flange inline

Duplex filter

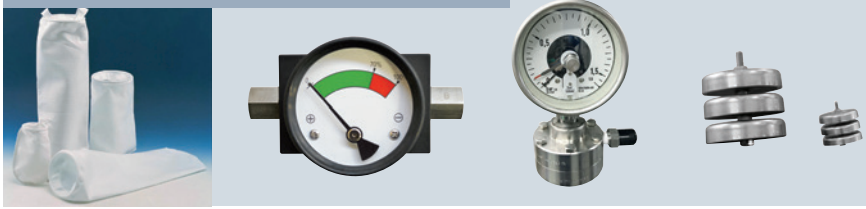
- KDF-K Duplex filter
- KDF-V Valve switch duplex filter
- KDF-VB Butterfly valve switch filter
- KDF-W Duplex filter

Other filter solutions



- KBF Bag filter
- KBF-M Multi-Bag filter
- KOW Oil and water separator
- KCS Centrifugal separator

Accessoires



- DeltaP Differential pressure indicator
  Contaminant level indicator
- Filterbags
- Magnets

Filter elements

- Basket elements
- Ring elements
- Star-pleated elements
- Wedge wire elements
- Custom-made elements

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KF-PCIII-10-2021-D4M21088-Rev. 4.9

Certificate No: LR21315849TA
Issue Date: 09/09/2021
Expiry Date: 08/09/2026

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.

Torsten Schroeder

Senior Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Certificate No: LR21315849TA
Issue Date: 09/09/2021
Expiry Date: 08/09/2026

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.

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Certificate No: LR21315848TA
Issue Date: 09.09.2021
Expiry Date: 08.09.2026

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

Certificate No: LR21315849TA
Issue Date: 09 September 2021
Expiry Date: 08 September 2026
Document No: HTS/ENS 34963-16, Issue No. 1

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

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations. Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.