

LLOYD'S REGISTER TYPE APPROVAL – DESIGN APPRAISAL DOCUMENT

Issued by: Rotterdam Technical Support Office

Issued to: Dinak S.A.

For: Modular Stainless Steel Exhaust Gas Systems
 TYPE APPROVAL CERTIFICATE No. LR21384036TA

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

Drawings:

Drawing No.	Rev.	Title
10-057-1	0	DINAK GE50 Straight Length with Expansion Bellow Ø80-100
10-057-2	0	DINAK GE50 Straight Length Ø80-100
10-057-3	0	DINAK GE50 Tee Ø80-100
10-057-4	0	DINAK GE50 Elbow Ø80-100
10-057-5	0	DINAK GE50 Straight Length with Expansion Bellow Ø125-600
10-057-6	0	DINAK GE50 Straight Length Ø125-600
10-057-7	0	DINAK GE50 Tee Ø125-600
10-057-8	0	DINAK GE50 Straight Length Ø125-600
10-057-9	0	DINAK GE50 Straight Length with Expansion Bellow Ø600-800
10-057-10	0	DINAK GE50 Straight Length Ø600-800
10-057-11	0	DINAK GE50 Straight Length Ø600-800
10-057-12	0	DINAK GE50 Straight Length Ø600-800
10-057-13	0	DINAK GE50+ Straight Length with Expansion Bellow Ø80-100
10-057-14	0	DINAK GE50+ Straight Length Ø80-100
10-057-15	0	DINAK GE50+ Tee Ø80-100
10-057-16	0	DINAK GE50+ Elbow Ø80-100
10-057-17	0	DINAK GE50+ Straight Length with Expansion Bellow Ø125-600
10-057-18	0	DINAK GE50+ Straight Length Ø125-600
10-057-19	0	DINAK GE50+ Tee Ø125-600
10-057-20	0	DINAK GE50+ Elbow Ø125-600
17-015-058	1	DINAK GE100+ Construction Details Ø80 / 280 – Ø100 / 300
17-015-059	1	DINAK GE100+ Construction Details Ø125 / 325 – Ø400 / 600
17-015-060	1	DINAK GE100+ Construction Details Ø450 / 650 – Ø600 / 800
17-015-061	1	DINAK GE100+ Straight Length Ø80 / 280 – Ø100 / 300
17-015-062	1	DINAK GE100+ Straight Length Ø125 / 325 – Ø400 / 600
17-015-063	1	DINAK GE100+ Straight Length Ø450 / 650 – Ø600 / 800
17-015-064	1	DINAK GE100+ Tee Ø80 / 280 – Ø100 / 300
17-015-065	1	DINAK GE100+ Tee Ø125 / 325 – Ø400 / 600

Drawings:

Drawing No.	Rev.	Title
17-015-066	1	DINAK GE100+ Tee Ø450 / 650 – Ø600 / 800
17-015-067	1	DINAK GE100+ Elbow Ø80 / 280 – Ø100 / 300
17-015-068	1	DINAK GE100+ Elbow Ø125 / 325 – Ø400 / 600
17-015-069	1	DINAK GE100+ Elbow Ø450 / 650 – Ø600 / 800

Brochures:

DINAK GE Modular flue system for GENERATORS and TURBINES
 DINAK GE+ Modular flue system for GENERATORS and TURBINES

INSPECTION / TEST REPORTS

TÜV Report on the Test of a System Chimney according to DIN EN 1856, No. A 2238-00/16..... dated 12 May 2016
 TÜV Report on the Test of a System Chimney according to DIN EN 1856, No. A 2157-00/15..... dated 23 April 2015
 LR Report of Inspection and Surveillance of Production Facilities dated 2 May 2012
 TÜV Report A 1445-01/06 supplementary to Test Report A 1445-00/05, No. A 1445-01/06 dated 8 September 2006
 TÜV Report on the Test for Mechanical Strength of Components of a System Chimney, No. A 1445-00/05 . dated 31 March 2005

PRODUCT DETAILS

Type	:	DINAK GE30+, GE50+, GE50, GE100 & GE100+
Size range	:	DN80 – 800 (GE) DN80 – 600 (GE+)
Max. working temperature	:	up to 600°C
Max. working pressure	:	5000 Pa
Materials:		
Inner liner	:	Stainless steel AISI 316L (1.4404) or Stainless steel AISI 304 (1.4301)
Outer liner	:	Stainless steel AISI 316L (1.4404) or Stainless steel AISI 304 (1.4301)
Insulation type	:	Mineral wool
Minimal insulation density	:	Types GE50, GE50+, GE100 & GE100+ = 100 kg/m ³ Type GE30+ = 130 kg/m ³
Minimal insulation thickness	:	Type GE30+ = 30 mm Types GE50 & GE50+ = 50 mm Type GE100 & GE100+ = 100 mm
Coupling / Connection	:	Spigot-and-socket joints in combination with locking band and silicone sealant



MANDATORY COMMENTS AND OPERATIONAL LIMITATIONS

The following product limitation(s) will be stated in the certificate:-

1. The surface temperature of the exhaust system is not to exceed 220 °C, not insulated parts and / or connections to a different piping system are to be efficiently lagged to minimize the risk of fire and to prevent damage by heat. Where lagging is oil-absorbing or may permit the penetration of oil, the lagging is to be encased in sheet metal or equivalent.
2. This modular exhaust gas system is considered acceptable for use on ships, classed or intended for Classification with the Society, provided that the relevant system requirements, with regard to fire-safety and watertight integrity, are complied with.
3. The installation of the modular exhaust gas system is to be carried out in accordance with the instructions of the manufacturer.
4. Supporting of both the GE and GE+ modular exhaust system is to be carried out in accordance with the Typical Installation Diagrams in the brochure "DINAK GE Modular flue system for GENERATORS and TURBINES".

Joseph Buttigieg

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A member of the Lloyd's Register group

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.