

## 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.

|                           |  |
|---------------------------|--|
| <b>Manufacturer</b>       | <b>DINAK, S. A.</b>  |
| <b>Address</b>            | Camiño do Laranxo nº 19, Vigo, 36216, Spain  |
| <b>Type</b>               | Exhaust Gas Systems  |
| <b>Description</b>        | Modular Stainless Steel Exhaust Gas Systems  |
| <b>Trade Name</b>         | DINAK GE50, GE100, GE30+, GE50+ & GE100+   |
| <b>Application</b>        | Twin-walled, insulated, modular, stainless steel, exhaust gas piping system for internal combustion engines  |
| <b>Specified Standard</b> | LR Rules and Regulations for the Classification of Ships<br>LR Rules and Regulations for the Classification of Special Service Craft<br>LR Rules and Regulations for the Classification of Naval Ships<br><br>Following tests were carried out according to EN 1856-1:2009 Chimneys – Requirements for metal chimneys – System chimney products: <ul style="list-style-type: none"><li>• gas tightness</li><li>• thermal performance in heat stress tests at shifted and vertical installation</li></ul><br>Following tests were carried out according to EN 1856-:2009 Chimneys – Requirements for metal chimneys – System chimney products and EN 1859:2000-07: Chimneys – Metal-chimneys – test methods: <ul style="list-style-type: none"><li>• resistance to compression load</li></ul> |

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- resistance to tensile load
- resistance to compression load of supports
- resistance to wind load and
- resistance to non-vertical installation

|                |               |  |
|----------------|---------------|--|
| <b>Ratings</b> | Size range    | : DN80 – 800 (GE)<br>DN80 – 600 (GE+)            |
|                | Max. pressure | : 5000 PaMax. working temperature : up to 600 °C |

### Other Conditions

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

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:** 16/30012

The Design Appraisal Document PRJ11100314830/JB and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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