NIPPON KAIJI KYOKAI

COPY

Approval No. AL22CF
Certificate No. TA21796E

APPROVAL OF MANUFACTURING PROCESS

This is to certify that

LOIRE INDUSTRIE
Le Clos Marquet, Saint Chamond Cedex
France

has been approved for the manufacturing process of undermentioned materials by the NIPPON KAIJI KYOKAI in accordance with the requirements of 1.2, Part K of the Society's "Rules for the Survey and Construction of Steel Ships" and Chapter 3, Part 1 of the Society's "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use".

MATERIALS : Aluminum Alloys

PROCESS : Forging / Heat treatment

REMARKS : See the reverse side

The products for the ships classed with the Society will be manufactured, tested and inspected complying with the Rules.

This certificate is valid from 13 July 2021 until 12 July 2026.
Issued at Tokyo on 13 July 2021.

Y. Takao
General Manager
Material and Equipment Department

REMARKS : 1) Product test and inspection are to be conducted in accordance with the requirements specified in Table 1.
2) Chemical composition and mechanical properties are to comply with the requirements specified in Table 2 and Table 3.
3) Test specimens are to be taken from the extended portion of the representative product in the lot.
4) Surface inspection and dimension inspection are to be in accordance with 6.1.9, Chapter 6, Part K of the NK Rules.
5) Heat treatment is to be T73 (Solution Treated and Overaged).
6) Unless otherwise specified in these remarks, Chapter 6, Part K of the NK Rules is to be followed.

Table 1 Requirements for product test and inspection

Material grade	Test and inspection item	Sampling of test specimens	Sampling location of test specimens	Test standard
AW-7075-T73 (Manufacturer's Specification)	Chemical Analysis[1)]	Each ladle	—	—
	Tensile Test	One specimen for each lot[2)]	Extended portion of the product	DIN EN ISO 6892-1
	Hardness Test	One specimen for each lot[2)]		DIN EN ISO 6506-1
	Surface Inspection and Dimension Inspection	Each product	—	—

Note:
1) Chemical analysis is to be conducted by semi-finished products supplier.
2) One lot is defined as each group of the forgings that being to the same charge and the same heat treatment in the same furnace.

Table 2 Chemical composition of ladle (%)

Cu	Si	Fe	Mg	Zn	Ti	Mn	Cr	Al
1.2 ~ 2.0	0.40 max.	0.50 max.	2.1 ~ 2.9	5.1 ~ 6.1	0.20 max.	0.20 max.	0.18 ~ 0.28	Reminder

Table 3 Mechanical properties

Proof stress (N/mm^2)	Tensile strength (N/mm^2)	Elongation (%)	Hardness (HB)
370 min.	460 min.	6 min.	—