DNV·GL

APPROVAL OF MANUFACTURER CERTIFICATE

Certificate No:
AMMM00001SA

This is to certify:

That

Fritz Baumann GmbH & Co. KG
Kappelrain 4
74363 Güglingen, Germany

is an approved manufacturer of
Steel Forgings

in accordance with
DNV GL rules for classification – Ships
DNV GL rules for classification – Naval vessels

and the following particulars:

Application range	**Forgings for hull structures and equipment** **Forgings for shafting and machinery** **Forgings for gearing**
Steel type(s)	**Carbon and carbon-manganese,** **Alloy,** **Austenitic stainless,** **Martensitic stainless,** **Austenitic-ferritic (Duplex) stainless**
Forging method	**Open die forging**
Max. weight	**2 500 kg**
Max. diameter/section	**See page 2**
Heat treatment condition	**See page 2**
Additional approval conditions	**Including heat treatment, including free forging in titanium alloy grade 3.7165 (TiAl6V4)**

Manufacturer(s) approved by this certificate is/are accepted to deliver according to DNV GL, DNV and GL rules. Materials to be applied to DNV GL classed object shall fulfill the material requirements in the applicable DNV GL class rules.

Issued at **Hamburg** on **2017-11-08**

This Certificate is valid until **2020-09-30**.
DNV GL local station: **Augsburg**

Approval Engineer: **Gabi Dau**

for **DNV GL**
Digitally Signed By: Roehr, Stefan
Location: DNV GL Hamburg, Germany
Signing Date: 2017-11-09 , on behalf of

Thorsten Lohmann
Head of Section

Particulars of the approval

Forgings for hull structures and equipment and for shafting and machinery

Steel type	Grade	Forging method[1)]	Max. weight [kg]	Delivery condition[2)]
C and C-Mn	Acc. to EN 10250-2 or EN 10083-2[3)]	OD	2 500	N or QT
Alloy	Acc. to EN 10250-3 or EN 10083-3[3)]	OD	2 500	QT
Martensitic stainless	1.4057 (X17CrNi16-2) acc. to EN 10250-4, EN 10088-3 or DIN 17440[3)]	OD	2 500	SHT+Q
Austenitic stainless	1.4571 (X6CrNiMoTi17-12-2) acc. to EN 10250-4, EN 10088-3 or DIN 17440[3)]	OD	2 500	SHT+Q
Duplex	1.4462 (X2CrNiMoN22-5-3) acc. to EN 10250-4, EN 10088-3 or SEW 400[3)]	OD	2 500	SHT+Q

Forgings for gearing

Steel type	Grade	Forging method[1)]	Max. weight [kg]	Delivery condition[2)]
Alloy	1.6587 (18CrNiMo7-6) acc. EN 10084[3)]	OD	2 500	Acc. to standard
	1.8519 (18CrMoV9) acc. EN 10085[3)]			Acc. to standard
	1.7168 (18MnCrB) acc. to customer specification[4)]			Acc. to standard

Titanium alloy forging grades

Grade	Forging method[1)]	Max. weight [kg]	Max. diameter / section [mm]	Delivery condition[2)]
3.7165 (TiAl6V4)acc. to DIN 17864, AMS 4928R and DNVGL-Naval Pt2 Ch5 Sect7[3)]	OD	300	250	SHT

Remarks:

1) OD: Open die forging
2) QT: Quenched and tempered
   SHT+Q: Solution Annealing followed by quenched
   SHT: Solution Heat Treated (Solution Annealing)
3) Certification of any material applied to classed object shall fulfill the applicable material requirements in the DNV GL class rules
4) Possible application and certification of any material to classed object is subject to case by case approval