

Certificate No:

**S-8409**

File No:

**499.50**

Job Id:

**262.1-018505-1**

## TYPE APPROVAL CERTIFICATE

### This is to certify:

#### That the Seats

with type designation(s)

**AVENTO Pro Air, AVENTO Pro M**

Issued to

**Grammer AG Werk Seating Systems  
Kümmersbruck Bayern, Germany**

is found to comply with

**International Code of Safety for High-Speed Craft, 2000 - Annex 10**

### Application :

**Pilot/Crew seat for design level 1 and 2: gcoll up to 12g**

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-10-31**

for **DNV GL**

DNV GL local station: **Essen Business Support**

Approval Engineer: **Marcus Gustafsson**

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**Odd Arne Lyngstad  
Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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## Product description

Passenger seats placed on legs on base rails fixed to the deck of the craft.

Type/model designation: "AVENTO Pro Air" & "AVENTO Pro M"

Basic construction consists of: Bottom/back with upholstery and hight adjustable legs fixed to rigid bottom plate.

Basic materials are aluminium-profiles/plates and steel bolts/details.

Seat-upholstery is composed of different types and quality.

## Application/Limitation

Type approval covers *strength* and *mounting* of Seat according to '2000 HSC-Code':

- *Design level 1* as specified for *collision* acceleration/ $g_{coll}$  up to 3g.
- *Design level 2* as specified for *collision* acceleration/ $g_{coll}$  from 3 to 12g.

Seat is approved for the following conditions relative to the craft:

*Forward* facing, for  $g_{coll}$  up to 12g;

- 1 seater with belt.

Seats are to be mounted to deck as tested (ref. documentation overleaf):

- Fixation to rigid plate with 4 Allen screws M8-8.8 with standard washer.

Deck structure of craft is *not* part of this approval, but is assumed separately approved.

Deck structure of craft is not part of this approval.

Any other arrangement/structure/mounting must be approved in each individual case.

## Approval conditions

Type Approval is issued based on Program 3-499.50-1 in DNV's Certification Note 2.9.

The approval covers requirements to Seats/Tables in ch. 4.4, 4.5 and Appendix 10 of the "International Code of Safety for High-Speed Craft, 2000, 2008 edition", as referred in Pt.3 Ch.7 of DNV's: "Rules for Classification of High Speed, Light Craft and Naval Surface Craft" at date of issue.

This Approval covers the strength of Seat with respect to collision only.

*Note: Restricted use of combustible material according to HSC-Code sec.7.4.3 is not part of this approval.*

Any Seat/Lap-belts are assumed separately approved according to relevant standard.

Any change which may influence the strength or safety of the Seat, shall shall be reported for evaluating any need for revision of the approval.

Any additional equipment may be accepted based on documentation and/or survey prior to installation, showing that strength/safety will not be influenced.

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### **Type Approval documentation**

Seat construction is covered by the following main drawings/documents, which may give further reference to underlying details/drawings:

#### **Tests carried out**

Dynamic test according to "2000 HSC-Code" Annex 10. Sec.3 was undertaken at Crash laboratory IWW in Trier, ref:

- Test Report "VEA\_2014\_0625", dwg no. 1298672, POMA-Testorder no. 2290788 dated 2014-05-05;
- Test Report "VEA\_2014\_0627", dwg.no. 1300443, POMA-Testorder no. 2290788 dated 2014-05-05;

Static test according to "2000 HSC-Code" Annex 10. Sec.2 was undertaken at Grammer in Amberg, ref:


- Test Report "VEA\_2014\_0624", dwg no. 1298672, POMA-Testorder no. 2290788 dated 2014-05-05;
- Test Report "VEA\_2014\_0626", dwg no. 1300443, POMA-Testorder no. 2290788 dated 2014-05-05;

*Note: Fire test of combustible materials according to HSC-Code sec.7.4.3 is not part of this approval.*

#### **Marking of product**

Seats are to be marked with type/model-designation(s) and name of manufacturer.

*Note: MED-marking (acc. to Maritime Equipment Directives 96/98/EC) does not apply for strength of Seats, but applies to fire safety of combustible materials, which are not part of this approval.*



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**Certificate retention survey**

Det Norske Veritas may perform Certification Retention Surveys at any time during the validity period of this certificate. The arrangement is to be in accordance with scopes described in item 2.6.4 of Certification Note 2.9.

END OF CERTIFICATE