



Marine & Offshore
Division

Certificate number: 38897/A1 BV

File number: AP 4523

Product code: 3932H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Exlar Corporation

Chanhassen - UNITED STATES OF AMERICA

for the type of product

ELECTRICAL ACTUATORS

Electric Linear Actuator GSM 20, GSM 30

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 33

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 01 Aug 2019

For BUREAU VERITAS,

At BV PORT EVERGLADES CENTRE, on 10 Feb 2015,

Flavio Rosas



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarm.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=fyvz705twi>
BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Electric Linear Actuators **GSM20 & GSM30**. They are intended to be used for Damper Control for Caterpillar engine type 46DF.

1.1 - Main Characteristics :

Electro-Mechanical Actuators Models:

- GSM20-0301-XXX-EX4-238-XT-65516

GSM 20 = GSM Series 2 inch frame size
 0301 = Stroke 3 inch, thread lead 0.1 inches /rev
 XXX = Special connectors with embedded leads, special face plate dimensions, special rod end
 EX4 = Resolver feedback
 238 = Stator wound for 5000 rpm rated speed with 230 V supply
 XT = Backlash free angular contact bearing

- GSM20-0301-XXX-CA1-2A8-36-XT-65520

GSM 20 = 2 inch frame size
 0301 = Stroke 3 inch, thread lead 0.1 inches /rev
 XXX = Special connectors with embedded leads, special face plate dimensions, special rod end
 CA1 = Encoder feedback
 2A8-36 = Stator wound for 3600 rpm rated speed with 24 V supply
 XT = Backlash free angular contact bearing

- GSM30-0302-XXX-EX4-238-XT-65518

GSM30 = GSM series, Frame size 3 inches
 0302 – Stroke 3”; Thread lead 0.2 inches/ rev
 XXX – Special connectors with embedded leads, special face plate dimensions, special rod end
 EX4 – Resolver feedback
 238 – Stator wound for 3000 rpm rated speed with 230 V supply
 XT – Backlash free Angular Contact Bearings

2. DOCUMENTS AND DRAWINGS:

Exlar:

Exlar GS Test Results_CATMotoren_130701, dated Jul 01, 2013.
 Exlar Product Summary for B, PArt Number: 64882 Rev.E, dated 2015-01-22.
 Final Assembly Drawings : No.:65516 Rev.A, No.:65518 Rev.A, No.:65520 Rev.A
 Quality Assurance Plan PN 65516 No.43785 Rev.A, dated 11-03-2014
 Quality Assurance Plan PN 65518 No.43785 Rev.A, dated 11-03-2014
 Quality Assurance Plan PN 65520 No.43785 Rev.A, dated 11-03-2014

3. TEST REPORTS:

Environ Laboratories LLC:

Cold Temperature Tests, No. 47761-3, dated May 23, 2013.
 Dry Heat Tests, No. 47761-4, dated May 22, 2013.
 Damp Heat Tests, No. 47761-5, dated May 28, 2013
 Vibration Tests, No. 47761-6, dated May 22, 2013
 Inclinations Tests, No. 47761-7, dated May 17, 2013.
 EMC Tests, No. 47761-14, dated May 7, 2013.

4. APPLICATION / LIMITATION:

- 4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships and Offshore Units.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - The equipment fulfils the EMC requirements for installation in General power Distribution Zones.
- 4.4 - BUREAU VERITAS Environmental Category, **EC Code: 33**
- 4.5 - Remote controlled valves whose failure could impair essential services are to be provided with a secondary means for operating them which may be manual control.
- 4.6 - The equipment, once installed on board ship, is to be tested in accordance with the above referred Regulations under the supervision of a Society's Surveyor.
- 4.7 - Only Hardware and Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.
- 4.8- Ex-certification is not covered by this certificate.
- 4.9 - The Exlar SV equipment is not included as part of the certification or testing requirements.

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The above products are to be supplied by **Exlar Corporation** in compliance with the type described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320.
- 5.3 - **Exlar Corporation** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products:

Exlar Corporation
18400 West 77th Street
55317 Chanhassen, MN 55317 USA

6. MARKING OF PRODUCT:

- Trade name
- Date of manufacture and serial number
- Equipment type number or model identification under which it was type-tested.

7. OTHERS:

- 7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that: **Exlar Corporation - 55317 Chanhassen - USA** will accept full responsibility for informing shipbuilders, ship-owners and/or their sub-contractors of the proper methods of fitting and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate No. 38897/A0 BV issued on 01 Aug 2014 by the Society.

***** END OF CERTIFICATE *****