



Marine Design Appraisal Document

Lloyd's Register EMEA
Marine Technology and Engineering Services
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Please quote the document number on all future communications

**CEDRONE OLEODINAMICA
HYDRAULIC CYLINDER 100/56 C402 Cylinder
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1. The Document(s) listed in paragraph 1 of the appendix have been examined for compliance with LR's Code for Lifting Appliances in a Marine Environment, August 2009, Chapter 3 and have been assigned an appraisal status as indicated, subject to the following comments:
2. The structural aspects of the HYDRAULIC CYLINDER 100/56 C402 Cylinder have been examined for CEDRONE OLEODINAMICA project to the following design operating criteria, as supplied by the designer:

Design pressure : 150 Bar
Working pressure..... : 130 Bar
Maximum dynamic push force : 117.8 kN
Maximum dynamic pull force : 80.8 kN
Minimum design temperature..... : -10° C

3. Comments.

- 3.1 The appraisal of the Cylinder is based upon the designer's pressure, stated on the General Arrangement Drawing .
- 3.2 The LAMH is informed by client this cylinder is used as manoeuvring cylinder for Side Bow Door.
- 3.3 Drawing L90-0057-0: It is noted that this item is made from bronze B14/G-CuSn12; and that this will be in contact with the tube, which is made from S316L grade stainless steel. The possible effect of galvanic corrosion, caused by two dissimilar materials being in contact, is to be monitored.
- 3.4 The stainless steels used are to comply with the Charpy impact requirements of the LAME Code. **AQS**
- 3.5 The Hydraulic Cylinder is to be pressure tested to 1.5 x design pressure (225 Bar) to the attending surveyor's satisfaction. **AQS**

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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