

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Brakes**

with type designation(s)
Multi disc brakes

Issued to

REGGIANA RIDUTTORI SRL
S Polo D'Enza RE, Italy

is found to comply with
Standard for Certification No. 2.22 Lifting Appliances

Application :

Spring activated disc brakes with hydraulic release.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2019-11-30**.

Issued at **Høvik** on **2015-12-01**

DNV GL local station: **Milan**

Approval Engineer: **Antonio Sendin Alvarez**

for **DNV GL**

Aldo Matteucci
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.

Product description

Parking and emergency brakes. The brakes are spring activated with hydraulic release. The braking momentum is added up of frictional forces acting on several discs and connected to the rotating shaft. Different number of springs and discs gives different brake torque for each brake type.

RF5:

Brake type	RF5-21	RF5-29	RF5-43	RF5-65	RF5-85	RF5-110	RF5-130
Brake torque	210	290	430	650	850	1100	1300

Number of brake sizes and brake torques are as given for RF5 for the following brake types:

- RFF5
- DG-RF/313
- DG-RF/314
- DG-RF/315
- DG-RF/316
- DG-RFF/396

RF2:

Brake type	RF2/7	RF2/14	RF2/21	RF2/32	RF2/43	RF2/60
Brake torque	70	140	210	320	430	600

Number of brake sizes and brake torques are as given for RF2 for the following brake types:

- DG-RF/288
- DG-RF/289
- DG-RF/290

RF170-290:


Brake type	RF170	RF200	RF230	RF290
Brake torque	1700	1980	2260	2830

Maximum design pressure for all brakes are 250bar.
Above torques are based on a friction coefficient of 0.135.

Above torques are maximum torques the brakes exerts. Allowable torque for the brakes are maximum torque divided by 1,8 or dynamic factor if this is above 1,8 (see referred standard, Ch.2, Sec.5 B305).


Application/Limitation

1. Certificates for materials in load carrying parts are to comply with a standard minimum equal to EN 10204/3.1.
2. When DNV GL product certificates are required, a DNV GL surveyor shall perform manufacturing survey and witness necessary testing.
3. Support and fixation of the brakes are not covered by this type approval and are to be separately considered/ approved in each case.
4. The friction factor has not been evaluated, the value is provided by the manufacturer.
5. There is no limitation for design temperature (Td) given by the manufacturer, as working temperature is specified to be approximately 100 degrees Celsius.



Job Id: **262.1-008890-2**
Certificate No: **TAS000008E**

Type Approval documentation



Job Id: **262.1-008890-2**
Certificate No: **TAS000008E**

Tests to be carried out

When DNV GL product certificate is required, each item is to be function and pressure tested.

Marking of product

Each brake shall be marked according to DNV's Standard for Certification No. 2.22 "Lifting Appliances"
June 2013 Ch.2 Sec.12

Periodical assessment

For retention of the type approval, DNV GL surveyor shall perform a survey every second year and before expire date of this certificate to verify that the conditions of the type approval are complied with.

END OF CERTIFICATE