

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Pneumatic Actuator**with type designation(s)
RC200

Issued to

**Rotork Sweden AB
FALUN, Sweden**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.****Dsgn. press./Torque See certificate**This Certificate is valid until **2018-12-31**.Issued at **Høvik** on **2015-09-17**DNV GL local station: **Stockholm**for **DNV GL**Approval Engineer: **Simon Ratcliffe**

**Marianne Spæren Marveng
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

Double acting (DA) and single acting spring closing (SR) pneumatic actuators approved according to DNV Ship Pt.4 Ch.7 Class III in the following sizes: RC210, 220, 230, 240, 250, 260, 265, 270, 280 and RC88.

This type approval covers the entire aluminium RC200 range with the exception of the following designations:

- C – Carbon steel variants
- E – Electric hydraulic variants

Materials:

Cylinder	Aluminium	ISO 6361 Al-SiMg
Endplate RC210–240	Aluminium	ISO 3522 Al-Si12(Fe) AISI A360 (UNS A13600)
Endplate RC250–88	Aluminium	ISO 3522 Al-Si10Mg AISI A360 (UNS A13600)
Spring house RC210–260	Aluminium	ISO 3522 Al-Si12(Fe) AISI A360 (UNS A13600)
Spring house RC270–88	Aluminium	ISO 3522 Al-Si10Mg AISI A360 (UNS A13600)
Drive shaft	Stainless steel/steel (optional)	

Operating medium: Air/Inert gas
 Corrosion allowance: 0 mm

Application/Limitation

This approval is related to the strength of parts subjected to internal pressure. Actuator functionality and output torque have not been subject to review.

The actuators are approved for the following design temperature ranges:

- Standard: -20/+80 °C
- High temp: 0/+150 °C
- Low temp: -40/+60 °C
- Low temp (arctic): -47/+60 °C

Maximum allowable pressures for each model:

Model	Cylinder diameter (mm)	Maximum allowable pressure	
		Standard and low temp models	High temp model
RC210	Ø55	10 bar	10 bar
RC220			
RC230	Ø85	10 bar	10 bar
RC240			
RC250	Ø125	10 bar	8.3 bar
RC260			
RC265	Ø140	8 bar	6.3 bar
RC270	Ø200	10 bar	10 bar
RC280			
RC88	Ø200	6 bar (SR) 7bar (DA)	6 bar (SR) 7bar (DA)

The actuators have not been subject to fire testing.

Production testing

Each actuator is to be pneumatically tested at 1.1x the maximum allowable pressure before delivery. Testing shall be witnessed by a DNV Surveyor when required by the rules or by the customer.

Certification

Actuators may be delivered with a manufacturer's works certificate only.

Type Approval documentation

<i>Doc. no.</i>	<i>Rev.</i>	<i>Description</i>	<i>Status</i>
		Rotork DNV Type Approval Application – verification of burst test pressure.	For Info
		RC200 Catalogue	For Info
		RC200-DA/SR Technical Data	For Info
105613-M		Spring Configurations for RC-Actuators	For Info
119773	E	Spring Housing RC230-240	For Info
119423	F	Spring Housing machined RC230-240	Approved
009250	B	Spring House Machined RC250-260	Approved
009249	C	Spring house blank RC250-260	For Info
007354	A	Cylinder drilling plan RC88	For Info
007347	A	Cylinder Upper RC88	For Info
007346	C	Cylinder lower RC88	For Info
001912	C	Spring housing machined RC270-280-88	Approved
001908	D	Spring housing blank RC270-280-88	For Info
000577	C	Cylinder RC270	Approved
000575	F	Cylinder RC260	Approved
000573	G	Cylinder RC250	Approved
000567	B	Cylinder RC240	Approved
000565	E	Cylinder RC230	Approved
000561	C	Cylinder RC220	Approved
000529	F	End plate RC250-260	Approved
000525	F	End plate RC230-240	Approved
000329	C	Cylinder RC280	Approved
000317	E	End plate RC270-280-88	Approved
000287	G	Spring housing RC265	Approved
000274	C	Cylinder RC265	Approved
000216	E	End plate RC265	Approved

Tests carried out

Burst testing (Sizes RC220, 240, 260, 265, 280).

Marking of product

For traceability to this type approval the actuators are to be marked with:

- Manufacturer's name or trade mark
- Pressure rating and maximum torque
- Type designation

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with.