DNV·GL

Certificate No:
**TAP00000T7**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Hydraulic Actuator for Valve (Not Hydraulic Motor)**

with type designation(s)
**RE2, RF2, RG2, RH2**

Issued to
## Scana Skarpenord AS
**RJUKAN, Norway**

is found to comply with
**Det Norske Veritas' Rules for Classification of Ships**

## Application :

**The actuator may be used on valves that have up to 90° rotation. On the condition of appropriate corrosion protection, the actuators may be used in the following areas: On deck, In tanks, Pump room, Duct keel and Engine rooms**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**
**Dsgn. press./Torque 110- 220 bar/ 125-64 000 Nm (dep. configuration, see cer.)**

This Certificate is valid until **2021-12-31**.

Issued at **Høvik** on **2017-01-25**
DNV GL local station: **Sandefjord** for **DNV GL**

Approval Engineer: **Ole Osuldsen**

**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.


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## Product description

Singe acting hydraulic actuators with spring return for quarter turn valves.

Type:

RE2 : Spring operated to CLOSED position.
RF2 : Spring operated to OPEN position.
RG2 : Spring operated to CLOSED position.
Hand wheel for manual operation.
RH2 : Spring operated to OPEN position.
Hand wheel for manual operation.

All actuator types have adjustable end positions (± 2°)

For each actuator size, there are 5 different cylinder sizes in order to tailor-make the actuators for different working pressures thus torque:

| Cylinder Type : | H5 | H6 | H7 | H8 | H9 |
|---|---|---|---|---|---|
| Max. Pressure : | 220 bar | 180 bar | 160 bar | 140 bar | 110 bar |
| | | | | | |

| | **Size 05** **Cylinder drawing** | | **Size 07** **Cylinder drawing** | | **Size 10** **Cylinder drawing** |
|---|---|---|---|---|---|
| DW90220 | H5 Cylinder | DW90302 | H5 Cylinder | DW90303 | H5 Cylinder |
| DW90301 | H7 Cylinder | DW88087 | H7 Cylinder | DW88077 | H7 Cylinder |
| DW94863 | H8 Cylinder | DW94342 | H9 Cylinder | DW94381 | H9 Cylinder |

| | **Size 12** **Cylinder drawing** | | **Size 14** **Cylinder drawing** | | **Size 16** **Cylinder drawing** |
|---|---|---|---|---|---|
| DW90304 | H5 Cylinder | DW90305 | H5 Cylinder | DW85002 | H5 Cylinder |
| DW88132 | H7 Cylinder | DW88133 | H7 Cylinder | DW84293 | H6 Cylinder |
| DW94347 | H9 Cylinder | | | DW88367 | H7 Cylinder |
| | | | | DW88368 | H8 Cylinder |

| | **Size 25** **Cylinder drawing** | | **Size 30** **Cylinder drawing** | | **Size 35** **Cylinder drawing** | | **Size 40** **Cylinder drawing** |
|---|---|---|---|---|---|---|---|
| DW84751 | H5 Cylinder | DW84514 | H5 Cylinder | DW84475 | H5 Cylinder | DW95204 | H5 Cylinder |
| DW90627 | H7 Cylinder | DW90651 | H7 Cylinder | DW90867 | H7 Cylinder | | |
| DW93964 | H9 Cylinder | | | | | | |

Mounting dimensions in accordance with ISO 5211.

## Application/Limitation

The maximum output torque from actuators used on butterfly valves must not exceed the limit at which the valve spindle or disc can be damaged if the disc is restrained in any position.

Actuators used on remote controlled ship side valves are to have indicators, which will function satisfactory, even if the actuators accidentally should be submerged in water.

Each actuator to be hydraulically pressure tested to 1,5 times the maximum design pressure. The test pressure need not be higher than 70 bar above maximum working pressure.
The cast nodular iron cylinders have temperature limitation; 0 Deg C to 85 Deg C.
Actuators with ferritic type of nodular cast iron pressure containing components may only be used on Class II & III piping systems (Ref; DNV GL Rules for Ship Pt 4 Ch 6 Sec 1 (1.5)).
Each product is to be accompanied by the following documents:

- Product certificate prepared by the manufacturer (3.1).
- Work's certificate for the materials used in the pressure exposed parts, indicating mechanical and chemical properties and heat treatment.
- Instruction manual/specification sheet.

## Type Approval documentation

## Marking of product

For traceability to this type approval, the products are at least to be marked with:

- Manufacturers name or trade mark

Type designation

## Certificate Retention Survey

For retention of the Type Approval, a DNV GL 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.

END OF CERTIFICATE