

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Pneumatic Actuator**

with type designation(s)

**DA-DAN - Double Acting Scotch Yoke, SR-SRN - Spring Return Single Acting Scotch Yoke**

Issued to

**OMAL SPA**

**Rodengo Saiano BS, Italy**

is found to comply with

**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**

**DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018**

## Application :

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

**Type**

**DA-DAN - Double Acting Scotch Yoke**

**SR-SRN - Spring Return Single Acting Scotch Yoke**

**Dsgn. press./Torque**

**See certificate**

**See certificate**

Issued at **Høvik** on **2018-08-01**

This Certificate is valid until **2023-07-31**.

for **DNV GL**

DNV GL local station: **Milan**

Approval Engineer: **Sinisa Sedlan**

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**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

Scotch yoke pneumatic actuators of the following types:

DA-DAN – Double acting

SR-SRN – Spring return single acting

Operating medium: Air/inert gas

Corrosion allowance: 1 mm

### Materials – Aluminium versions

DA08 – DAN1920 / SRN07 – SRN960

Cylinder EN AW 6063 AlMg0.7Si UNI EN 573-3:2013 Min. tensile strength at 80°C = 205 MPa

Caps EN AB 46100 AlSi11Cu2(Fe) UNI EN 1676:2010

Shaft 1.4305 (AISI 303) EN 10088-3:2014

DA2880 – DA8000 / SR1440 – SR4000

Cylinder EN AC 45300 AlSi5Cu1Mg UNI EN 1706:2010 Min. tensile strength at 80°C = 205 MPa

Caps EN AB 46100 AlSi11Cu2(Fe) UNI EN 1676:2010

Shaft 1.4305 (AISI 303) EN 10088-3:2014

### Materials – Stainless steel version

DA15 – DA480 INOX / SR15 – SR240 INOX

Cylinder 1.4408 (AISI 316) DIN 1.4408

Caps 1.4408 (AISI 316) DIN 1.4408

Shaft 1.4404 (AISI 316L) DIN 1.4404 / EN 10088-3:2014

DA960 – DA3840 INOX / SR480 – SR1920 INOX

Cylinder 1.4408 (AISI 316) DIN 1.4408

Caps 1.4408 (AISI 316) DIN 1.4408

Shaft 1.4404 (AISI 316L) DIN 1.4404 / EN 10088-3:2014

### Address of actuator manufacturing plant

Villa Carcina BS, Italy

## Application/Limitation

Design pressure of cylinders: 8,5 bar

Design temperature: -20/+80 °C

| DN            | Standard actuator | Standard actuator with manual override | Stainless steel actuator | Maximum pressure (bar) | Maximum torque (Nm) at 8 bar |
|---------------|-------------------|----------------------------------------|--------------------------|------------------------|------------------------------|
| DOUBLE ACTING |                   |                                        |                          |                        |                              |
| 32            | DA08              | -                                      | -                        | 8,4                    | 10,5                         |
| 32            | DAN15             | -                                      | DA15 INOX                |                        | 22,5                         |
| 40            | DAN30             | -                                      | DA30 INOX                |                        | 45,0                         |
| 45            | DAN45             | -                                      | -                        |                        | 67,5                         |
| 50            | DAN60             | DANV60                                 | DA60 INOX                |                        | 90,0                         |
| 60            | DAN106            | DANV106                                | -                        |                        | 159,0                        |
| 63            | DAN120            | DANV120                                | DA120 INOX               |                        | 180,0                        |
| 72            | DAN180            | DANV180                                | -                        |                        | 270,0                        |
| 80            | DAN240            | DANV240                                | DA240 INOX               |                        | 360,0                        |
| 90            | DAN360            | DANV360                                | -                        |                        | 540,0                        |
| 100           | DAN480            | DANV480                                | DA480 INOX               |                        | 720,0                        |
| 115           | DAN720            | DANV720                                | DA720 INOX               |                        | 1080,0                       |
| 125           | DAN960            | DANV960                                | DA960 INOX               |                        | 1440,0                       |
| 145           | DAN1440           | DANV1440                               | DA1440 INOX              |                        | 2160,0                       |
| 160           | DAN1920           | DANV1920                               | DA1920 INOX              |                        | 2880,0                       |

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|     |        |          |             |     |         |
|-----|--------|----------|-------------|-----|---------|
| 240 | DA2880 | -        | -           |     | 4320,0  |
| 208 | DA3840 | DANV3840 | DA3840 INOX |     | 5760,0  |
| 240 | DA5760 | -        | -           |     | 8640,0  |
| 290 | DA8000 | -        | -           | 7,0 | 10000,0 |

| DN                          | Standard actuator | Standard actuator with manual override | Stainless steel actuator | Maximum pressure (bar) | Maximum torque (Nm) at 8 bar |        |
|-----------------------------|-------------------|----------------------------------------|--------------------------|------------------------|------------------------------|--------|
|                             |                   |                                        |                          |                        | Spring                       | Air    |
| SPRING RETURN SINGLE ACTING |                   |                                        |                          |                        |                              |        |
| 32                          | SRN07             | -                                      | -                        | 8,4                    | 7,0                          | 13,2   |
| 40                          | SRN15             | -                                      | SR15 INOX                |                        | 15,0                         | 28,3   |
| 50                          | SRN30             | SRNV30                                 | SR30 INOX                |                        | 30,0                         | 56,4   |
| 60                          | SRN53             | SRNV53                                 | -                        |                        | 53,0                         | 99,7   |
| 63                          | SRN60             | SRNV60                                 | SR60 INOX                |                        | 60,0                         | 112,9  |
| 72                          | SRN90             | SRNV90                                 | -                        |                        | 90,0                         | 169,3  |
| 80                          | SRN120            | SRNV120                                | SR120 INOX               |                        | 120,0                        | 225,7  |
| 90                          | SRN180            | SRNV180                                | -                        |                        | 180,0                        | 338,6  |
| 100                         | SRN240            | SRNV240                                | SR240 INOX               |                        | 240,0                        | 451,4  |
| 115                         | SRN360            | SRNV360                                | SR360 INOX               |                        | 360,0                        | 677,1  |
| 125                         | SRN480            | SRNV480                                | SR480 INOX               |                        | 480,0                        | 902,9  |
| 145                         | SRN720            | SRNV720                                | SR720 INOX               |                        | 720,0                        | 1354,3 |
| 160                         | SRN960            | SRNV960                                | SR960 INOX               |                        | 960,0                        | 1805,7 |
| 240                         | SR1440            | -                                      | -                        |                        | 1440,0                       | 2468,6 |
| 208                         | SR1920            | SRNV1920                               | SR1920 INOX              |                        | 1920,0                       | 3611,4 |
| 240                         | SR2880            | -                                      | -                        |                        | 2880,0                       | 5417,1 |
| 290                         | SR4000            | -                                      | -                        |                        | 4000,0                       | 7523,4 |

## Type Approval documentation

### Tests carried out

Burst test

### Production testing

Each actuator is to be pneumatically tested at 1.1x the maximum allowable pressure before delivery.

### Certification

No product certificate is required.

### 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 GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.