

# 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	Dsgn. press./Torque
<b>DA-DAN - Double Acting Scotch Yoke</b>	<b>See certificate</b>
<b>SR-SRN - Spring Return Single Acting Scotch Yoke</b>	<b>See certificate</b>

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
<b>DOUBLE ACTING</b>					
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

Job Id: **262.1-029246-1**  
 Certificate No: **TAP00001G5**

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
<b>SPRING RETURN SINGLE ACTING</b>						
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.