DNV·GL

Certificate No:
TAP00001G2
File No:
777.91
Job Id:
262.1-017423-3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pneumatic Actuator

with type designation(s)
GD - Double Acting Scotch Yoke, GS - Spring Return Single Acting Scotch Yoke

Issued to
ACTUATECH SPA
Villa Carcina BS, 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
GD - Double Acting Scotch Yoke	**See certificate**
GS - Spring Return Single Acting Scotch Yoke	**See certificate**

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

Issued at **Høvik** on **2018-08-01**
DNV GL local station: **Milan**

for **DNV GL**

Approval Engineer: **Sinisa Sedlan**

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

Scotch yoke pneumatic actuators of the following types:
GD – Double acting
GS – Spring return single acting

Operating medium: Air/inert gas
Corrosion allowance: 1 mm

Materials – Aluminium versions

GD08 – GD1920 / GS07 – GS960

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

GD2880 – GD8000 / GS1440 – GS4000

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

GD15 – GD480 INOX / GS15 – GS240 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

GD960 – GD3840 INOX / GS480 – GS1920 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

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	GD08	-	-	8,4	10,5
32	GD15	-	GD15 INOX		22,5
40	GD30	-	GD30 INOX		45,0
45	GD45	-	-		67,5
50	GD60	GDV60	GD60 INOX		90,0
60	GD106	GDV106	-		159,0
63	GD120	GDV120	GD120 INOX		180,0
72	GD180	GDV180	-		270,0
80	GD240	GDV240	GD240 INOX		360,0
90	GD360	GDV360	-		540,0
100	GD480	GDV480	GD480 INOX		720,0
115	GD720	GDV720	GD720 INOX		1080,0
125	GD960	GDV960	GD960 INOX		1440,0
145	GD1440	GDV1440	GD1440 INOX		2160,0
160	GD1920	GDV1920	GD1920 INOX		2880,0
240	GD2880	-	-		4320,0
208	GD3840	GDV3840	GD3840 INOX		5760,0
240	GD5760	-	-		8640,0

290	GD8000	-	-	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	GS07	-	-	8,4	7,0	13,2
40	GS15	-	GS15 INOX		15,0	28,3
50	GS30	GSV30	GS30 INOX		30,0	56,4
60	GS53	GSV53	-		53,0	99,7
63	GS60	GSV60	GS60 INOX		60,0	112,9
72	GS90	GSV90	-		90,0	169,3
80	GS120	GSV120	GS120 INOX		120,0	225,7
90	GS180	GSV180	-		180,0	338,6
100	GS240	GSV240	GS240 INOX		240,0	451,4
115	GS360	GSV360	GS360 INOX		360,0	677,1
125	GS480	GSV480	GS480 INOX		480,0	902,9
145	GS720	GSV720	GS720 INOX		720,0	1354,3
160	GS960	GSV960	GS960 INOX		960,0	1805,7
240	GS1440	-	-		1440,0	2468,6
208	GS1920	GSV1920	GS1920 INOX		1920,0	3611,4
240	GS2880	-	-		2880,0	5417,1
290	GS4000	-	-		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.