

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Brakes**

with type designation(s)

SH5-2, SH5-3, SH5-4, SH5-5, SH5-6, SH9A-1, SH9A-2, SH9A-3, SH15-1, SH15-2, SH15-3, SH18B, SH25-1, SH25-2

Issued to

Stromag France S.A.S.
La Guerche-sur-l'Aubois, France

is found to comply with

DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2017-09-25**This Certificate is valid until **2022-09-24**.for **DNV GL**DNV GL local station: **Le Havre**Approval Engineer: **Antonio Sendin Alvarez**

Aldo Matteucci
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

Spring activated disc brake with hydraulic release.

Brake type	Lining	Dynamic, nominal brake Force [N]	Static, nominal brake Force [N]	Maximum disc clearance [mm]	Friction factor
SH5-2	US2-1	10700	9600	1	0.43
	WS1-3	7300	6500	1	0.3
SH5-3	US2-1	23600	21200	1	0.43
	WS1-3	16200	14500	1	0.3
SH5-4	US2-1	42000	37800	1	0.43
	WS1-3	28800	25900	1	0.3
SH5-5	US2-1	57000	51300	1	0.43
	WS1-3	39100	35100	1	0.3
SH5-6	US2-1	70000	63000	1	0.43
	WS1-3	48000	43200	1	0.3
SH9A-1	US2-1	73500	65150	1	0,42
	US2-5	70000	63000	1	0,4
SH9A-2	US2-1	89000	80100	1	0,42
	US2-5	84700	76200	1	0,4
SH9A-3	US2-1	105000	94500	1	0,42
	US2-5	100000	90000	1	0,4
SH15-1	US2-1	100000	90000	1	0.41
	US2-4	73000	66000	1	0.3
SH15-2	US2-1	120000	110000	1	0.41
	US2-4	88000	80000	1	0.3
SH15-3	US2-1	150000	133000	1	0.41
	US2-4	110000	99000	1	0.3
SH18B	US2-1	180000	160000	1	0.41
	US2-4	130500	117400	1	0.3
SH25-1	US2-1	180000	160000	1	0,40
	US2-4	134000	120000	1	0,3
	UF2-7	157500	108000	1	0.3
SH25-2	US2-1	250000	225000	1	0,40
	US2-4	184000	165000	1	0,3
	UF2-7	219800	150720	1	0,3

Application/Limitation

1. When DNV GL product certificates are required, a DNV GL surveyor shall perform manufacturing survey and witness necessary testing.
2. All materials are to be delivered with 3.1 certificates, documenting mechanical properties and chemical composition in accordance with the DNVGL-ST-0378 Sec. 3
3. The friction factor has not been evaluated, the value is provided by the customer.

Type Approval documentation

The following documentation was stamped 2013-01-24, 2013-02-04*, 2014-05-06** and 2017-07-12***

Tests carried out

Prototype tests carried out and satisfactory results documented as follows:

Job Id: **262.1-010642-3**
Certificate No: **TAS0000147**

1. Brake SH25-2 & linings US2-1, measure the Dynamic Brake Force (by stopping a load in free drop at the test tower). Dated at 06/11/2012
2. Brake SH5-6 & linings US2-1, measure the Dynamic Brake. Dated at 18/10/2012

In order to obtain a DNV GL Product Certificate, each brake shall be tested and witnessed by a DNV GL surveyor

Marking of product

Each brake is to be marked according to DNVGL-ST-0378 Sec.14.5.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform periodical surveys on dates agreed with the manufacture and before expiry date of this certificate in order to verify that the conditions of the type approval are complied with.

END OF CERTIFICATE