

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Tunnel Thruster**

with type designation(s)

Dia. 300 mm, Dia. 412 mm, Dia. 513 mm, Dia. 610 mm

Issued to

**Sleipner Motor AS
FREDRIKSTAD, Norway**

is found to comply with

**DNV GL rules for classification – High speed and light craft
DNV GL rules for classification – Ships****Application :****Auxiliary duty****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Høvik** on **2019-11-26**This Certificate is valid until **2023-12-31**.DNV GL local station: **Sandefjord**Approval Engineer: **Tore Gunnar Rønning**for **DNV GL**

Digitally Signed By: Williksen, Dag Harald

Location: DNV GL Høvik, Norway

Signing Date: 26.11.2019 , on behalf of

**Oddvar Deinboll
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.



Job Id: **262.1-008901-5**
Certificate No: **TAM00000DT**

Product description

Tunnel thruster with fixed pitch contra-rotating propellers

Application/Limitation

The thrusters are approved for auxiliary duty, driven by any power source e.g hydraulic or electric motor with the following ratings:

Type	Maximum input torque [Nm]	Gear ratio [-]	Maximum motor speed [RPM]	Application factor continuous	Application factor peak
Dia. 300 mm	94	1.615	2910	1.05	1.40
Dia. 412 mm	227	1.615	1790	1.05	1.40
Dia. 513 mm	593	1.615	1360	1.05	1.40
Dia. 610 mm	626	1.615	1160	1.05	1.40

Type Approval documentation

Title	Drawing no	Revision
SH 400		
Q-Prop RH SH400	SM-139895	A
Styretapp Ø3x8 m6	01-03-550-114	1
Crown Wheel Z21 SH400TC	SM-138421	A
Pinion Z13 SH400TC	SM-135545	A
Gear Case SH400	SM-135546	A
Driveshaft SH400	SM-135972	A
Housing for bearings SH400	SM-136003	A
Propeller shaft SH400	SM-136006	B
Bearing lockin-nut	SM-136012	A
Låseskive tannhjul SH400	SM-136028	A
Protection ring	SM-136005	A
Festeskive drivaksel SH400	SM-136146	A
Q-Prop LH SH400	SM-139667	A
Protection ring SH400	SM-136033	A
Gerleg compl SH400	SM-135548	B
SH700		
Styretapp Ø3x8 m6	01-03-550-114	A
Propeller shaft SH 700	SM-121141	C
Gear case SH700 TC	SM-122915	D
Propell SH700 LH	SM-121010	A
Propell SH700 RH	SM-121011	A
Crown wheel Z21 SH700TC	SM-121972	A
Washer pinion	SM-121214	A
Ring pinion	SM-122754	A
Pinion Z13 SH700TC	SM-121978	A

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Driveshaft SH700	SM-122486	C
Locking washer Crown wheel SH700 TC	SM-122798	A
Housing for bearings SH700	SM-122868	C
Lockingnut bearings SH700	SM-122762	A
Propellmutter M24 PM 35-40	SM-123290	B
Protection ring Tetnings ring SH700	SM-123310	B
Gearleg compl SH700	SM-122510	B
SH1000		
Gear Case SH1000TC	01-01-1000-100	W
Pinion Drive (z13)	01-03-1000-118	A
Driveshaft	01-03-1000-106	F
Crown Wheel Z21	01-03-1000-117	B
Propeller Shaft	01-03-1000-102	Y
Propeller LH1 Ø500	01-03-1000-104-01	A
Propeller RH1 Ø500	01-03-1000-104-01	B
Housing for bearings	01-03-1000-101	T
Protection ring Protection ring for simmering propeller shaft	01-03-1000-114	B
Lockingnut bearings	01-03-1000-125	H
Spacer ring	01-03-1000-129	A
Washer Pinion	01-03-1000-127	E
Ring pinion	01-03-1000-128	A
Propellernut PM45	Propellmutter PM45	A
Washer crown wheel	SM-123414	A
SH1000 Gearhus Montert Part list	SM-123130	A
SH1400		
Pinion Drive (z13)	01-03-1000-118	A
Locking ring bearings SH1000/1400	SM-122947-02	A
Propeller Shaft	01-03-1000-102	Y
Crown Wheel Z21	01-03-1000-117	B
Protection ring Protection ring for simmering propeller shaft	01-03-1000-114	B
Gear Case	01-03-1400-100	K
Propeller LH1 Ø596 SH1400TC	01-03-1400-104	D
Driveshaft	01-03-1400-110	F
Propeller RH1 Ø596 SH1400TC	100 1270 RH1	A
Spacer ring	01-03-1000-129	A
Washer Pinion	01-03-1000-127	E
Ring pinion	01-03-1000-128	A
Propellernut PM45	Propellernut PM45	A
Locking ring bearings SH1000/1400- oljestyling	SM-122947-01	A
Washer crown wheel	SM-123414	A

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Girhus Montert SH1400

SM-123143

A

Marking of product

Manufacturers name or trade mark and type number designation

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

In case where the type approved product is manufactured at other companies, the periodical assessment shall verify that the type approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore, periodical assessment shall be carried out randomly at these companies.

END OF CERTIFICATE