

# TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**SH400 (dia. 300 mm), SH700 (dia. 412 mm), SH1000 (dia. 513 mm), SH1400 (dia. 610 mm),  
13 0602 (dia. 250mm), 20 0603 (dia. 300mm), 50 0600 (dia. 386mm)**

Issued to

**Sleipner Motor AS  
FREDRIKSTAD, Norway**

is found to comply with

**DNV rules for classification – Ships****DNV rules for classification – High speed and light craft****DNV rules for classification – Yachts****Application :****Manoeuvring duty only.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed  
by DNV GL.**Issued at **Høvik** on **2023-04-05**for **DNV GL**This Certificate is valid until **2023-12-31**.DNV GL local station: **Sandefjord**Approval Engineer: **Vidar Johansen****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: **262.1-008901-8**  
Certificate No: **TAM00000DT**  
Revision No: **2**

## Product description

Fixed and retractable tunnel thrusters with fixed pitch contra-rotating propellers.

## Application/Limitation

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

Fixed type	Maximum input torque [Nm]	Gear ratio [-]	Maximum motor speed [rpm]	Application factor, continous	Application factor, peak
SH400 (dia. 300 mm)	94	1.615	2910	1.05	1.40
SH700 (dia. 412 mm)	227	1.615	1790	1.05	1.40
SH1000 (dia. 513 mm)	593	1.615	1360	1.05	1.40
SH1400 (dia. 610 mm)	626	1.615	1160	1.05	1.40

Retractable type	Maximum input torque [Nm]	Gear ratio [-]	Maximum motor speed [rpm]	Application factor, continous	Application factor, peak
13 0602 (dia. 250 mm)	46	1.6	2930	1.05	1.40
20 0603 (dia. 300 mm)	68	1.6	2810	1.05	1.40
50 0600 (dia. 386 mm)	193	1.6	2375	1.05	1.40

The thrusters covered by this type approval certificate are exempted from the requirement of local temperature indication of the lubrication oil due to their small size and demonstrated service history. For the retractable units, an exemption has also been granted for low oil level alarm of the lubrication oil as the oil is of very small quantity and fully enclosed within the units.

The thrusters covered by this type approval is approved for manoeuvring duty only. Additional class notations such as e.g. Dynamic Positioning, and/or projects following other rule sets than stated on the front page of this certificate will need case-by-case evaluation.

## Type Approval documentation

Title	Drawing no.	Revision
<b>SH400</b>		
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 <sup>(1)</sup>	SM-135546	C
Driveshaft SH400	SM-135972	A
Housing for bearings SH400 <sup>(1)</sup>	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
Gearleg compl SH400	SM-135548	C

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Oil tank arrangement SM164443 A

### SH700

Styretapp Ø3x8 m6	01-03-550-114	A
Propeller shaft SH 700	SM-121141	C
Gear case SH700 TC <sup>(1)</sup>	SM-122915	F
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
Driveshaft SH700	SM-122486	C
Locking washer Crown wheel SH700 TC	SM-122798	A
Housing for bearings SH700 <sup>(1)</sup>	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	C
Oil tank arrangement	SM164543	A

### SH1000

Gear Case SH1000TC <sup>(1)</sup>	01-01-1000-100	Y
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 <sup>(1)</sup>	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 without oil tube	SM-123130	A
Gearhouse assembly SH1000 with oil tube	SM-142609	B
Oil pipe SH1000	SM-123112	B
Oil tank arrangement	SM164543	A
Oil tank arrangement – on-water oil change	SM164444	A

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### **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 for simmering propeller shaft	01-03-1000-114	B
Gear Case <sup>(1)</sup>	01-03-1400-100	M
Housing for bearings <sup>(1)</sup>	01-03-1000-101	T
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
Girhus Montert SH1400 with oil pipe	SM-123143	B
Gearhouse assembly SH1400 without oil pipe	SM-142633	B
Oil pipe SH1400	SM-122755	A
Oil tank arrangement	SM164543	A
Oil tank arrangement – on-water oil change	SM164444	A

### **13 0602**

Gear leg w/propeller Ø250mm	SM-103278	A
Retract mechanical Ø250mm	SM-101951	A

### **20 0603**

Gear leg w/propeller Ø300mm	SM-178451	A
Retract mechanical Ø300mm	SM-118569	A

### **50 0600**

Gear leg w/propeller Ø386mm	SM-106161	D
Retract mechanical Ø386mm	SM-160266	A

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### General

Statement letter – Thrusters oil temperature		2020-11-10
Statement letter – Oil level monitoring on retractable thrusters		2023-01-04
Statement thruster rpm measurement	211220AUA01	0.2
Materiallegeringer <sup>(2)</sup>	10.3.2	13
Oil tank approval drawing	SM-163865	A

*<sup>(1)</sup>Alternative material CC492K acc. material list<sup>(2)</sup> accepted*

### Marking of product

Manufacturers name or trade mark and type 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