TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001XD
Revision No:
3

This is to certify:

That the Control levers

with type designation(s)
L01 AZ-i, L01 PD-i, L01ASA, L01TDA, L04, LF40, LF50, LF70, LF80, LF90, LF120, LF150, LF60, LE90S, LE90D

Issued to
Lilaas AS
Horten, **Norway**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
L01 AZ-i, L01 PD-i	D	B	A	B	B (IP66)
L01ASA, L01TDA	A	B	A	B	A
L04	D	B	A	B	B (IP56)
LF40, LF50, LF70, LF80, LF90, LF120, LF150	D	B	A	Not relevant	C
LF60	A	B	A	Not relevant	C
LE90S, LE90D	B	B	A	Not relevant	C (IP66)

Issued at **Høvik** on **2023-09-06**

This Certificate is valid until **2028-08-15**.
DNV local unit: **Sandefjord**

Approval Engineer: **Ståle Sneen**

for **DNV**
Digitally Signed By: Elter, Frederik Tore
Location: DNV Høvik, Norway

Frederik Tore Elter
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

Lilaas control levers as described below:

Type	Description	Compass safe distance Standard	Steering
L01 AZ-i	Azimuth control lever w/ el-shaft system	80 cm	60 cm
L01 PD-i	Double/single thruster/propulsion control lever w/ el-shaft system	50 cm	35 cm
L01ASA	Azimuth control lever	55 cm	40 cm
L01TDA	Double/single thruster/propulsion control lever	55 cm	40 cm
L04	Joystick control lever – 1, 2 or 3 axes	45 cm	30 cm
LF40	Joystick control lever – 1, 2 or 3 axes	25 cm	10 cm
LF50	Joystick control lever – 1, 2 or 3 axes	25 cm	15 cm
LF60	Joystick control lever – 1, 2 or 3 axes	[1] 500 cm	[1] 500 cm
LF70	Azimuth control lever	25 cm	15 cm
LF80	Rudder control lever	25 cm	15 cm
LF90	Double/single thruster/propulsion control lever	25 cm	15 cm
LF120	Double/single thruster/propulsion control lever	25 cm	15 cm
LF150	Rudder control wheel	25 cm	15 cm
LE90S	Single RPM/pitch control lever	20 cm	10 cm
LE90D	Double RPM/pitch control lever	20 cm	10 cm

Note 1: Compass safe distance has not been documented for LF60.

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Drawing No.	Rev./Date	DNV No.	Title
2012-3259	01	5	DNV Technical report L04
2013-3018	0	6	DNV Technical report L01
LF14306	D1	7	Assembly drawing L01 TD
LF14611	E	8	Assembly drawing L01 AZ
LF14841	D	9	Assembly drawing L04
-	B	10	Datasheet Control lever – part no. L01TDA-AA-00001
-	C	11	Datasheet Control lever – part no. L01ASA-AA-00001
-	C	12	Datasheet Joystick control – part no. L04EAA-AB-00002
97-1110	1997-01-30	13	DNV Technical report LF60, LF70, LF90, LF120
97-1294	01	14	DNV Technical report LF60 (EN 60529 - IP66)
2004-3315	01	15	DNV Technical report LF90
2009-3014	01	16	DNV Technical report LF40, LF50, LF70, LF80, LF90, LF120, LF180
LF10871	A	17	Assembly drawing Joystick LF60
LF10859	E	18	Assembly drawing LF70AZ
LF10887	A	19	Assembly drawing LF90S
LF10855	A	20	Assembly drawing LF120S
-	C	21	Datasheet Joystick control – part no. LF60-3-02
-	D	22	Datasheet Azimuth control lever – part no. LF70R-01-21
-	C	23	Datasheet Double (FWD) thruster – part no. LF90D-01-127
-	B	24	Datasheet Double (FWD) propulsion – part no. LF120D-01-39
20187	2	25	Applica test report L01 AZ-i and L01 PD-i
LF15082	A	26	Wiring diagram L01 El.shaft
LF15137	A	27	Wiring diagram L01 T/P El.shaft
LF15210	B1	28	Wiring diagram L01TD/PD El.shaft
LF15135	A1	29	Assembly drawing L01PDM
2006-3293	01	30	DNV Technical report KM-MOD
2006-3475	01	31	DNV Technical report LF80
2009-3014	01	16	DNV Technical report LF40, LF50, LF70, LF80, LF90, LF120, LF180
2010-3282	01	33	DNV Technical report LF40 (IEC 60529 – IP66)

Drawing No.	Rev./Date	DNV No.	Title
LF11062	C	34	Assembly drawing LF80 w/shaft
LF12234	D	35	Assembly drawing LF50 3-axes
LF13440	B	36	Assembly drawing LF150 Steering Wheel
LF15149	A	37	Assembly drawing LF40-3-02 KM
-	D	38	Datasheet Joystick control – part no. LF40-3-02
-	E	39	Datasheet Joystick control – part no. LF50-3-03
-	D	40	Datasheet Rudder control lever – part no. LF80-01-01
-	C	41	Datasheet Rudder control – part no. LF150-01-19
E20182.00	00	42	Nemko Test Report LE90D(S)
ASD15866	B	45	Assembly drawing LE90S
ASD15867	B	46	Assembly drawing LE90D
-	B	44	Datasheet Single/Double lever – part no. LE90
E21190.00	00	47	Nemko Test Report EMC 1-6 GHz

Renewal assessment report for TAA00001XD, DNV Sandefjord 2023-09-06

Tests carried out

All models have been tested according to:
Applicable tests according to class guideline DNV-CG-0339, August 2021.
'Compass safe distance' was measured according to section 11.2 of IEC 60945 4th edition (2002).

LE90D has additionally been tested according to:
Applicable tests for protected equipment according to IEC 60945, 4th edition (2002).

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:
- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

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.

END OF CERTIFICATE