

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting Gear/Rope Sheaves**

with type designation(s)

**1380-1250-220x135-160,
1230-1100-200x130-150,
720-630-130x77-80,
1230-1080-200x150-150,
1745-1540-300x180-218**

Issued to

**Schwartz GmbH
Xanten, Germany**

is found to comply with

DNV GL standard DNVGL-ST-0377 – Standard for shipboard lifting appliances**DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances****Application :****This Type Approval entitles the manufacturer to issue Works Certificates for the individual products.**Issued at **Hamburg** on **2019-01-10**This Certificate is valid until **2024-01-09**.for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Heiko Herrmann**

**Jörg Kallies
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

Wire rope sheaves made from cast polyamide (PA6c), types:

Pos.	Dimension	Liebherr ID No.	STP-article code	Drawing No.
1	1380-1250-220x135-160	10543021	S061110231	SR-RD1380-002
2	1230-1100-200x130-150	10541737	S06110374	SR181-003
3	720-630-130x77-80	916943914	F06110008	SR52III-113-010
4	1230-1080-200x150-150	11265413	S06110405	SR181-199-001
5	1745-1540-300x180-218	11972961	S061110195	SR-RD1760-001

Application/Limitation

Basic Data:

Type no.	1	2	3	4	5
Nominal diameter	1250	1100	630	1080	1540
Maximum line pull	800 kN	800kN	200kN	800kN	1500kN
Rope diameter	54mm	52mm	29-30mm	52mm	72mm
Wrap angle	180°	180°	180°	180°	180°
Maximum deflection	5°	5°	3°	5°	5°
Design temperature	-25°C to 60°C	-25°C to 60°C	-25°C to 45°C	-40°C to 60°C	-25°C to 45°C

Material: Lamigamid 310 according to DNVGL Approval of Manufacturer (AoM) no. AMMM00002CN

Working Conditions: Superposition of worst case conditions cannot be assessed in this context. The operator shall observe impairing effects according to manufacturer recommendations, e.g. humidity, deflection, temperature or rope speed.

Maintenance: Instructions for inspection and maintenance of plastic rope sheaves as well as removal criteria shall be provided by the manufacturer.

Bushing/bearing: Outer dimensions are evaluated for undersize, bearings are checked for plausibility. Sufficient monitoring and maintenance shall be provided.

Type Approval documentation

Marking of product

Each sheave shall be permanently marked with a unique serial number and DNVGL Type Approval ID. If sufficient traceability is provided by the documentation on board the vessel, TA ID may be waived.

Periodical assessment

A production site with valid Approval of Manufacturer (AoM) certificate for material in question is exempted from the obligation concerning retention and renewal assessments.

End of Certificate