

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

Variable displacement axial piston pump: V30D-045, V30D-075, V30D-095, V30D-115, V30D-140, V30D-160 and V30D-250

Issued to

**InLine Hydraulik GmbH
Berlin, Germany**

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL class programme DNVGL-CP-0505 – Type approval – Pumping units****Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Max. working press.: 350 [bar]****Operating media: Hydraulic Oil****Temperature range: -25°C to +80°C; ambient: -40°C to +60°C**Issued at **Hamburg** on **2020-02-18**This Certificate is valid until **2025-02-17**.for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Ana Cristina Do Carmo Insfran****Olaf Drews
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

The variable displacement pumps for hydraulic oil systems work according to the swash plate principle, i.e. 9 pistons operate in rotating cylinder cavities whereby they are pushed against a swash plate, which sits at an angle to the cylinders. The pistons suck in fluid during half a revolution and push fluid out during the other half. Opening and closing of the cylinder cavities is via openings in the swash plate (i.e. control disc). The axial movement of the pistons is provided by an adjustable swash plate. The setting angle (0° - max) can be continuously (stepless) varied in proportion to the desired displacement/flow. The setting range can be mechanically limited by limiting screws (in the case of V and VH controller, only fixed limitation is possible). The position of the swash plate can be controlled via a visual mechanical indicator.

Design Pressure: 350 [bar]

Maximal Speed:

Type	Max. Speed [rpm]
V30D-045	3600
V30D-075	3200
V30D-095	2900
V30D-115	2800
V30D-140	2600
V30D-160	2500
V30D-250	2000

Mounting: flange mounting or foot bracket.

Rotating direction: Clockwise, anti-clockwise or bidirectional.

Housing pressure: 1 bar/dynamic 2bar; suction pressure max. 25 bar.

Type	Geometric displacement [cm ³ /rev.]	Nominal Pressure P _{nom} [bar]
V30D-045	45	350
V30D-075	75	350
V30D-095	96	350
V30D-115	115	250 ¹
V30D-140	142	350
V30D-160	164	250 ¹
V30D-250	250	350

Note 1: High pressure is only possible with reduce displacement

Material:

Components	Type	Material	Standard
Housing and cover	V30D-045, -075, -095, 115, -140, -160 and -250	Spheroidal graphite cast iron (EN-GJS-400-15)	DIN EN 1563

Application/Limitation

The pump is type approval for class I-III piping applications.
Not approved for operation of steering gear.
The displacement pump is not equipped with a safety relief valve.

Type Approval documentation

Tests carried out

Capacity and hydraulic test – Test Report: docuN141UTS2 dated on 2019-07-24

Marking of product

For traceability to this approval the V30D-045, V30D-075, V30D-095, V30D-115, V30D-140, V30D-160 and V30D-250 pump is to marked with:

- Manufactures name and trademark
- Type designation
- Size
- Max. working pressure

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNVGL-CP-0338, Sec.4.

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in [https:// approvalfinder.dnvgl.com](https://approvalfinder.dnvgl.com)