



Certificate No:
TAP00002E2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Screw-Spindle Pump Inserts for Sttering Gear

with type designation(s)
SNE/ SNEF

Issued to

Allweiler GmbH
Radolfzell am Bodensee, Baden-Württemberg, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0505 – Type approval – Pumping units

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Max. working press.: 95 bar
Operating media: Hydraulic oil
Temperature range: up to 150°C

Issued at **Hamburg** on **2022-05-03**

This Certificate is valid until **2027-05-02**.

DNV local station: **Augsburg**

for **DNV**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

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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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2021-03

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Product description

The pump inserts unit - SNE / SNEF are intended installed into rotary vane steering gear on vessels. The SNE / SNEF series inserts are basic components of three-screw spindle pumps: one power rotor screw and two symmetrically opposed idler rotor screws. The spindles rotate, fluid is moved axially from suction to discharge chamber in a continuous, uniform flow with minimum fluid pulsation and pump noise.

Pump Type: 3 spindle screw pumps

Series: SNE / SNEF

Technical Data:

SNE / SNEF					
Size	Pitch angle (degree)				
40	38	46	54		
80	36	42	46	54	
120	42	46	51	54	
210	40	46	54		
280	43	46	54		
440	40	46	52	54	
660	40	44	46	51	54
940	36	42	46	50	54
1300	38	42	44	46	54
1700	42	46	50		
2200	42	46			
2900	40				
3600	46				

Materials:

Components of SNE/ SNEF	Material // Number	Standard
Driving spindle	16MnCrS5 (1.7139) Steels	DIN EN 10084
Idler spindle	16MnCrS5 (1.7139) Steels	DIN EN 10084
Pump casing insert	EN-GJS-400-15/ZSV / EN-JS-1030/ZSV Nodular Cast Iron	DIN EN 1563
Balance bush	EN-GJL-250 / EN-JL-1040 Grey Cast Iron	DIN EN 1561

Application/Limitation

The materials of the pump insert SNE/ SNEF components shall be suitable for the proposed design and operating conditions. Materials for pump housing, items subject to operating pressure fluids, and for welds with welding procedure specifications shall be according with DNV Rules Pt. 2 and Pt.4 Ch. 6.

Pumps shall be delivered with materials certificates in according with DNV Rules Ship Pt. 4 Ch.6 Sec. 2 Table 3.

The type approved Screw-Spindle Pump Inserts may be used in steering gear according DNV Rules Part 4 Ch. 6 Sec. 9.

The pressure limits for the steering gear e.g., working pressure of 75 bar, depends on the insert size.

The displacement pump formed by using the pump insert is to be equipped with a safety relief valve by the steering gear manufacturer, who is also responsible for ensuring that the pressure casing material is sourced from a DNV approved manufacturer and documented with a material certificate accordingly. The pressure casing containing the insert is to be hydrostatically pressure tested at a minimum 1,5 x the maximum allowable working pressure.

Table 3 – The technical data need to be observed in all applications where a pump insert SNE/ SNEF are intended to be incorporated into a steering gear unit.

SNE / SNEF Max Pressure ¹		Speed: 1750 1/min				Speed: 3500 1/min			
		Dyn. Viscosity:		Dyn. Viscosity:		Dyn. Viscosity:		Dyn. Viscosity:	
		50 (mm ² /s)		68 (mm ² /s)		50 (mm ² /s)		68 (mm ² /s)	
Size	Pitch	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)
40	38	120	100	120	120	120	120	120	120
	46	98	75	120	99	120	108	120	120
	54	74	57	97	74	106	81	120	107
80	36	120	107	120	120	120	120	120	120
	42	113	87	120	114	120	120	120	120
	46	98	75	120	99	120	108	120	120
	54	74	57	97	74	106	81	120	107
120	42	113	87	120	114	120	120	120	120
	46	98	75	120	99	120	108	120	120
	51	82	63	108	83	118	91	120	119
	54	74	57	97	74	106	81	120	107
210	40	120	93	120	120	120	120	120	120
	46	98	75	120	99	120	108	120	120
	54	74	57	97	74	106	81	120	107
280	43	109	84	120	110	120	120	120	120
	46	98	75	120	99	120	108	120	120
	54	74	57	97	74	106	81	120	107
440	40	120	93	120	120	120	120	120	120
	46	98	75	120	99	120	108	120	120
	52	79	61	104	80	114	87	120	115
	54	74	57	97	74	106	81	120	107
660	40	107	82	120	108	120	118	120	120
	44	93	71	120	94	120	102	120	120

(continuation table 3)

SNE / SNEF Max Pressure ¹		Speed: 1750 1/min				Speed: 3500 1/min			
		Dyn. Viscosity:		Dyn. Viscosity:		Dyn. Viscosity:		Dyn. Viscosity:	
		50 (mm ² /s)		68 (mm ² /s)		50 (mm ² /s)		68 (mm ² /s)	
Size	Pitch	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)	Release pressure valve (bar)	Max. duration pressure (bar)
	46	86	66	113	87	120	95	120	120
	51	72	56	95	73	104	80	120	105
	54	65	50	85	66	93	72	120	94
940	36	114	88	120	116	120	120	120	120
	42	92	71	120	93	120	102	120	120
	46	80	62	105	81	115	89	120	116
	50	70	54	92	71	100	77	120	101
	54	60	47	79	61	87	67	114	88
1300	38	98	76	120	100	120	109	120	120
	42	85	66	112	86	120	94	120	120
	44	80	61	105	81	114	88	120	115
	46	74	57	97	75	106	82	120	108
	54	56	43	73	56	80	62	105	81
1700	42	78	60	103	79	-	-	-	-
	46	68	52	90	69	-	-	-	-
	50	59	46	78	60	-	-	-	-
2200	42	78	60	102	79	-	-	-	-
	46	68	52	89	68	-	-	-	-
2900	40	75	58	98	76	-	-	-	-
3600	46	61	47	79	61	-	-	-	-

Note 1: A deviation from the operating point according to the data sheet may only take a place after consultation the manufacturer.

Type Approval documentation

Tests carried out

- Long duration running test - 100 h duration test

Marking of product

For traceability to this type approval each pump inserts SNE/SNEF are to be marked with:

- Manufacturer's name: **ALLWEILER** 
- Serial number: xxxxx
- Pump Type designation: SNE



Job Id: **262.1-036406-1**
Certificate No: **TAP00002E2**

- Pump Capacity (Q) = xxx l/min
- Speed (n) = xxx 1/min
- Viscosity (ν) = xxx mm²/s
- Differential pressure (Δp) = xx [bar]
- HS= xxx [m]
- Power (P) = xxx [kW]

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338, Sec.4.

- The 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.dnv.com>

END OF CERTIFICATE