



Manual for the Feathering Propeller

DF-128

3 and 4 blade model

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INSTALLATION on the shaft

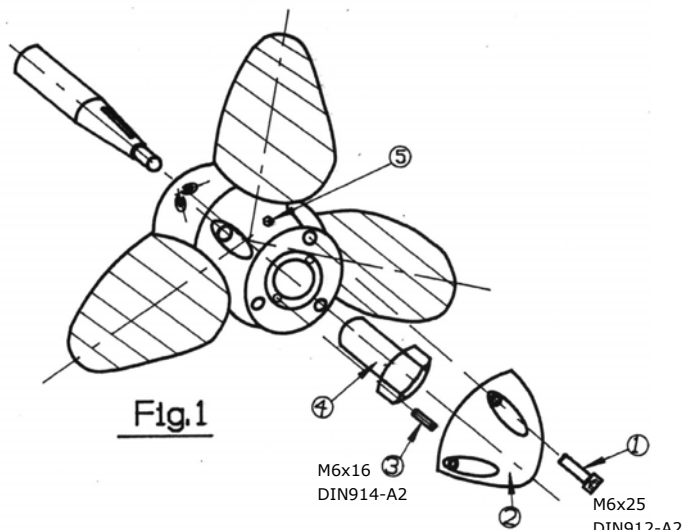
The VARIPROP is delivered assembled, greased and ready for installation.

He may not be disassembled, otherwise the warranty claim goes out!

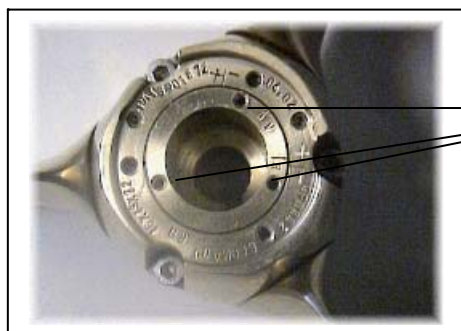
Before fitting the VARIPROP onto the shaft, check key and keyway in the propeller hub. Take care that the key is the proper dimension and that the hub slides completely onto the shaft (see below). Remove the zinc anode (2) and the nut (4). Fit the propeller onto the shaft strongly. Tighten the nut (4) with LOCTITE low (pink) onto the shaft (torque-setting see page 9) and secure it with the lock pins (3). Fit the anode (2).

Make sure that the propeller is always protected from electrolytic corrosion by changing the anode (2) latest every year! May not be necessary in freshwater.

After the VARIPROP has been fitted properly check that the blades rotate freely from the forward stop to the reverse stop. The shock absorber function can be felt ! See servicing page 8.

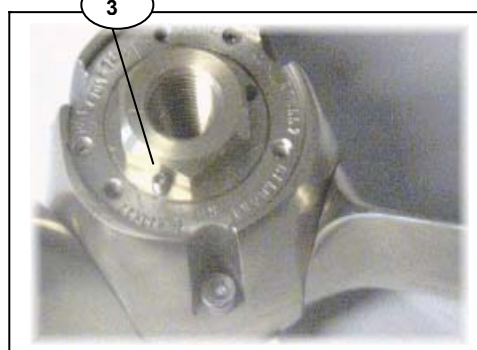


MOUNTING: First slide the prop on the shaft without key. Mark the shaft with a grease-pen at the prop end. After tightening the shaft nut very strongly (torque-setting see page 9) the mark must disappear. If not, the key is binding and the top or the sides of the key must be filed down. Light must be shining through on the top of the key when looking into the hub from astern. You may have to move your eye vertically to see it.



Only two of the three lock-pin holes can be used, depending on the final position of the shaft-nut flange.

Carefully align the lock-pins (3) straight. They must go in easily. If not, try first to tighten the propnut a little further until they do. If impossible, back off the nut a little. The lock-pins should be hand tightened only. If overtightened they may strip.



ATTACHING THE ZINC-CONE:

First, insert all three zinc-cone screws (1) loosely, then tighten securely in succession. Use LOCTITE low (pink) and observe the little washers. They prevent the grease from squeezing out of the hub during operation. Be sure to clean the screws and screw-holes from any grease before applying the loctite.

ENGINE DRY TEST:

Please consider that a dry test of the engine **MUST NOT** be done while the VARIPROP is fitted onto the shaft ! The VARIPROP needs water pressure on the blades, otherwise the prop could be damaged !!

OPERATION

The VARIPROP feathers automatically when the shaft rotation is stopped. After engine start-up and shifting into gear the blades will engage in either forward or reverse.

THE BEST WAY TO FEATHER THE PROPELLER IN THE SAILPOSITION IS:

VARIPROP sailposition with mechanical gear-box:

- Power at 3 to 4 knots in forward.
- **Stop the engine** and engage the transmission in reverse to stop the freewheeling of the shaft.

VARIPROP sailposition with hydraulic transmission:

- Power at 3 to 4 knots in forward.
- Stop the engine while still engaged in forward. The remaining oil pressure of the transmission will stop spinning the shaft to feather the blades in the sailposition.

If the propeller is not feathered in the sailposition the shaft will freewheel like with a fixed propeller.

In that case start the engine again and repeat the steps above.

Once the prop is feathered , it is better to shift the transmission to neutral.

DO NOT stop the engine while it turns in reverse. In this case the blades will stay in the reverse position and will not feather. You can actually use this feature to drive a shaft generator.

Please note that 98% of our delivered VARIPROP propellers for hydrolic gear boxes feather into sailing position without a shaft lock as you turn off the engine with forward gear still clutched in. This procedure generates higher oil pressure and prevents shaft rotation. This small-scale friction is usually enough to feather the propeller instantly into sailing position. If this procedure does not work, you most likely need to fit a shaft lock. For large yachts, equipped with a propeller from our VARIPROP XLS range, we highly recommend to fit a shaft lock to ensure the propeller feathers and stays in sailing position.

TROUBLE SHOOTING: If the propeller does not work in forward or reverse go systematically through the points below:

- Check low idle of the engine. It should be 800 to 900 rpm in idle.
- Check shifting movement of the transmission lever. Make sure that the shifting travel is not too short. The amount of lever travel, as measured at the pivot point of the actuating lever, between the neutral position and end positions for forward and reverse can be found in the owners manual of your transmission. A larger amount of lever travel is in no way detrimental.
- Check the clutch discs of the transmission. They could be worn out.

WARNING: It is important to follow the instructions below carefully so as to avoid excessive load and shock to the gears, shortening their life.

- When going from ahead to astern or the opposite, it is necessary to idle down and shift at low rpm's (max.1200rpm) between gears to allow smooth reversing of rotation without binding. This will substantially lengthen the service life of your propeller gears.
- When going from ahead to astern or the opposite, you can hear the turning-noise of the feathering blades. This is normal and not a problem or a defect of your VARIPROP.
- The propeller body must always be completely filled with a high viscosity grease. We recommend synthetic grease typ TW.2 GEL or mineral multi-purpose grease EP/SAL 8 (see servicing page 9)
- The propeller must be protected from electrolytic corrosion by fitting the usual zinc anodes on the shaft plus the prop anode. We recommend the replacement of the anode once a year.
- If you want to protect your VARIPROP with Antifouling, use only Antifouling which needs a primer first. Otherwise chemical interaction and decomposition could occur. Our recommendation is *Velox TF plus* including a primer (offers also protection against electrolyses), available from your VARIPROP distributor.

Never dismantle the VARIPROP yourselves !!

Disassembly and reassembly require special tools and technical know-how only available at the factory or their approved service centres.

PITCH ADJUSTMENT „LH“

GERNAL: The pitch adjustment is very simple on the VARIPROP, and can be done in or out of the water in a matter of few minutes, if there is enough space between propeller hub and strut to fit an allen key into the set screws (1) & (3) at Foto below, right side. If not, the propeller must first be pulled. (see removing from the shaft)

Propeller in the drawing below (Fig.2) is for a left hand rotation VARIPROP LH.

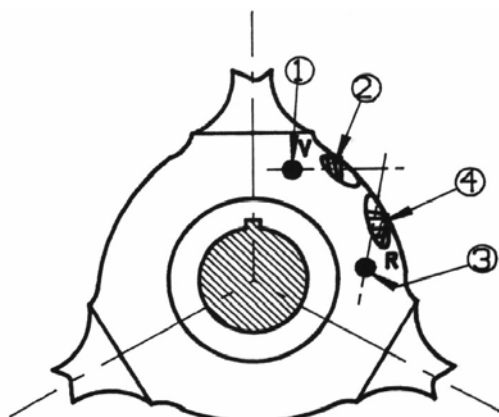
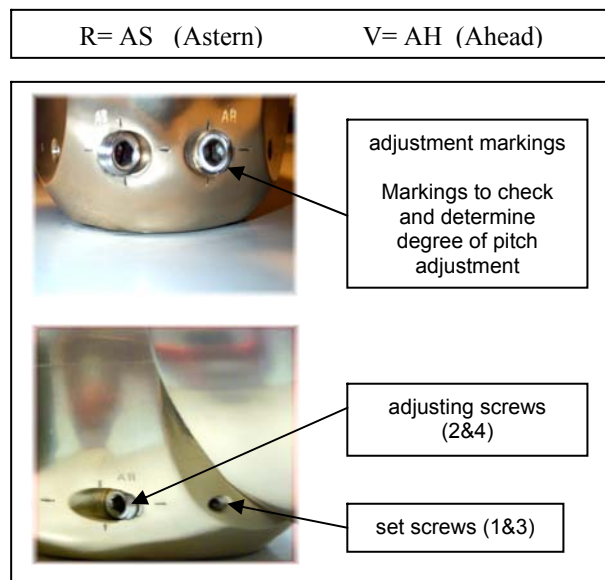


Fig.2

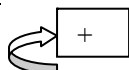


The following description refers to the view towards astern for a **left hand VARIPROP**.

A. Adjusting the forward pitch:

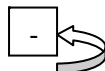
1. Remove the set screw (1, behind the blades). Use the 4mm Allen key supplied with the prop.
2. Turn the adjusting screw (2) which is marked as "AH" or "V" with the 6mm Allen-key as follows:

2a. Increasing of pitch approx. 3" max.:



- Turn the adjusting screw (2) clockwise. (see "NOTE" and page 6)
- Secure set screw (1) with LOCTITE low (pink) Lock set screw strongly.

2b. Reducing of pitch approx. 2" max.:

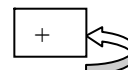


- Turn the adjusting screw (2) anti-clockwise. (see "NOTE" and page 6).
- Secure set screw (1) with LOCTITE low (pink)
- Lock set screw strongly.

B. Adjusting the reverse pitch:

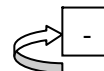
1. Remove the set screw (3, behind the blades). Use the 4mm Allen-key supplied with the prop.
2. Turn the adjusting screw (4) which is marked as "AS" or "R" with the 6mm Allen-key as follows:

2a. Increasing of pitch approx. 2" max.:



- Turn the adjusting screw (4) anti-clockwise. (see "NOTE" and page 6)
- Secure set screw (3) with LOCTITE low (pink) Lock set screw strongly.

2b. Reducing of pitch approx. 3" max.:



- Turn the adjusting screw (4) clockwise. (see "NOTE" and page 6).
- Secure set screw (3) with LOCTITE low (pink).
- Lock set screw strongly.

NOTE: It is quite possible to set the pitch continuously variable and independently for forward and reverse. Turning of the adjusting screws (2) & (4) by quarter a revolution (90°) changes the pitch approx. 1". This will change the engine revolution by approx.200.

PITCH ADJUSTMENT „RH“

GERNAL: The pitch adjustment is very simple on the VARIPROP, and can be done in or out of the water in a matter of few minutes, if there is enough space between propeller hub and strut to fit an Allen key into the set screws (1) & (3) at Foto below, right side. If not, the propeller must first be pulled. (see removing from the shaft)

Propeller in the drawing below (Fig.3) is for a **right hand** rotation **RH**.

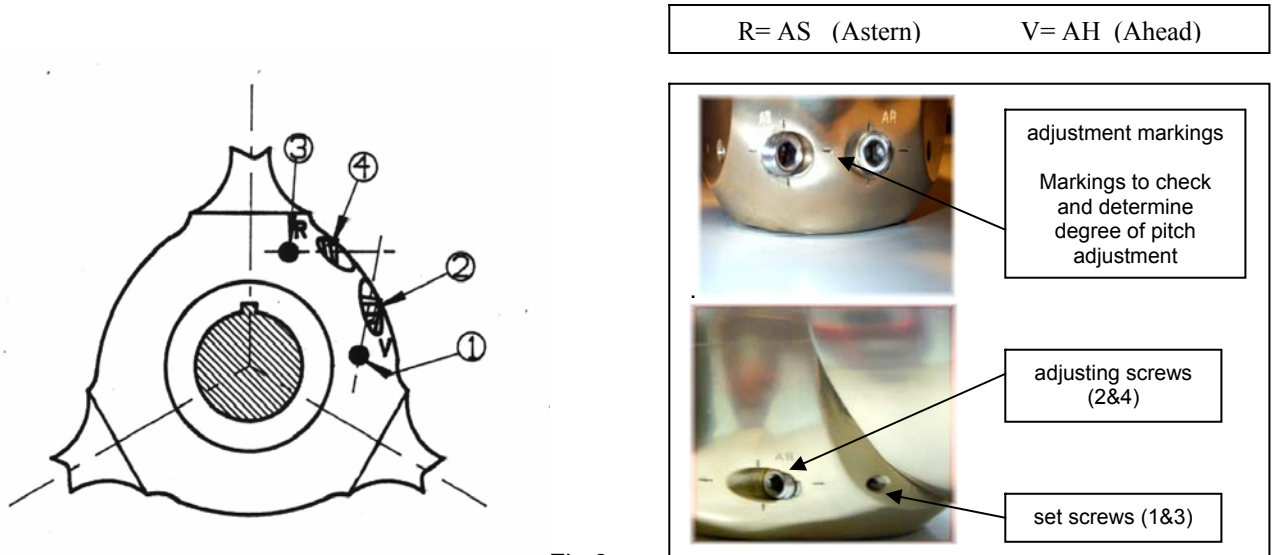


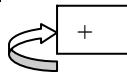
Fig.3

The following description refers to the view towards astern for a **right hand VARIPROP**.

A. Adjusting the forward pitch :

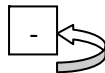
1. Remove the set screw (1, behind the blades). Use the 4mm Allen key supplied with the prop.
2. Turn the adjusting screw (2) which is marked as "**AH**" or "**V**" with the 6mm Allen-key as follows:

2a. Increasing of pitch approx. 3" max.:



- Turn the adjusting screw (2) clockwise. (see "NOTE" and page 6)
- Secure set screw (1) with LOCTITE low (pink).
- Lock set screw strongly.

2b. Reducing of pitch approx. 2" max.:

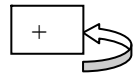


- Turn the adjusting screw (2) anti-clockwise. (see "NOTE" and page 6).
- Secure set screw (1) with LOCTITE low (pink).
- Lock set screw strongly.

B. Adjusting the reverse pitch :

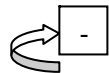
1. Remove the set screw (3, behind the blades). Use the 4mm Allen key supplied with the prop.
2. Turn the adjusting screw (4) which is marked as "**AS**" or "**R**" with the 6mm Allen-key as follows:

2a. Increasing of pitch approx. 2" max.:



- Turn the adjusting screw (4) anti-clockwise. (see "NOTE" note and page 6)
- Secure set screw (3) with LOCTITE low (pink).
- Lock set screw strongly.

2b. Reducing of pitch approx. 3" max.:



- Turn the adjusting screw (4) clockwise. (see "NOTE" and page 6).
- Secure set screw (3) with LOCTITE low (pink).
- Lock set screw strongly.

NOTE: It is quite possible to set the pitch continuously variable and independently for forward and reverse. The turning of the adjusting screws (2) & (4) by quarter a revolution (90°) changes the pitch approx. 1". This will change the engine revolution by approx. 200.

Defining and checking pitch adjustments

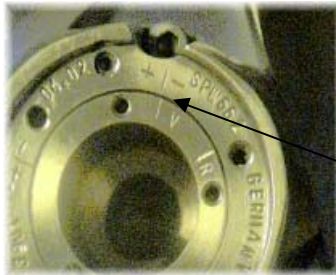
It is quite possible to set the pitch continuously variable and independently for forward and reverse. The turning of the adjusting screws (2) & (4) in Figure 2 & 3 (see pages 4&5) by quarter a revolution changes the pitch approx. 1". That means a half turn (180°) changes the pitch by 2" etc..

For a check of pitch adjustments there are markings on the hub face under the zinc anode.

To return to original factory pitch settings, line up "AH" or "V" resp. "AS" or "R" markings on the hub face.

Example:

check adjustments ahead



markings
line up

original factory pitch setting
ahead

inner marking has moved

plus



pitch has been increased ahead

check adjustments astern



markings
lined up

original factory pitch setting
astern

inner marking has moved

minus



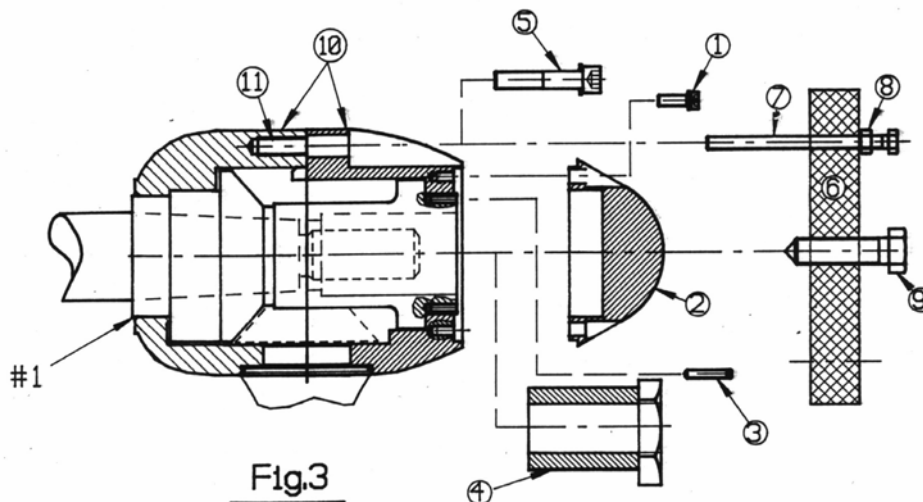
pitch has been decreased astern

Note :

- If the engine does not reach the desired RPM reduce the pitch.
- If the engine exceeds the desired RPM increase the pitch.
- 1" of pitch reduction / increase results in approx. 200 engine revolutions increase / reduction.

VARIPROP REMOVAL

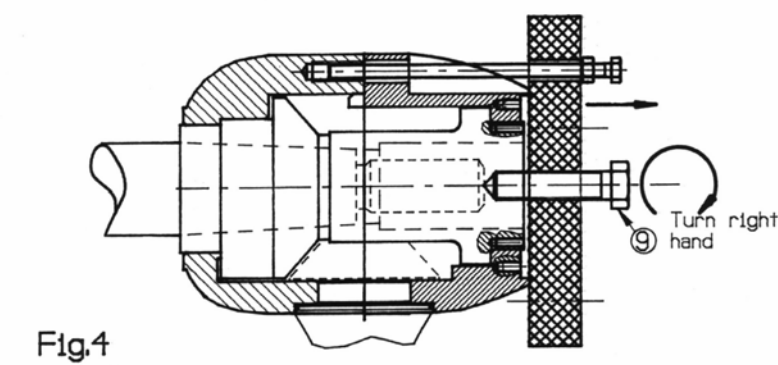
- 1.) In order to remove the VARIPROP you must first remove the zinc anode (2).
- 2.) Remove both lock pins (3) and the prop nut (4)



- 3.) Then remove at first only two hexagonal socket screws (5). **DO NOT OPEN ALL !**
- 4.) Fit two of the long hexagonal head screws (7) into the outer bolt circle diameter of the puller (6). Now fit the SPW puller (6) onto the aft of the rear boss and screw the long hexagonal head screws (7) completely into the screw holes (11) of the front boss half (10). Tighten the nut (8) on the head screws (7) until the plate (6) is fitted snugly and evenly to the aft boss.

CAUTION: Do not dismantle the two separate halves of the Variprop hub !!!

In this mode remove the last hexagonal socket screw (5) as well and fit the third long hexagonal head screw. Take care that plate (6) will fit snugly and evenly to the aft boss.



- 5.) Now turn the hexagon head bolt (9) against the end of shaft until the VARIPROP comes off the taper. Never use a hammer to remove the prop from the taper !!!
- 6.) At the end remove the puller (6) carefully and secure the boss halves (10) with the socket screws (5). Tighten strongly with LOCTITE blue (medium). Take care that the hub halves do not come apart when removing the hexagonal head screws (7).

We highly recommend the use of above described special puller, available from your VARIPROP dealer. Standard 3-prong pullers can easily slip and damage the rounded VARIPROP housing !

SERVICING

The VARIPROP needs to be greased a minimum of once a year. The VARIPROP body should always be completely filled with a high viscosity **grease** of a hydrophobic nature. Remove the cap screw (5) and screw in the lubricating nipple which is supplied with the tools. Further remove the zinc anode ! With each pump of the grease gun rotate the propeller from forward stop to reverse stop to allow the grease to work through the propeller. Stop to pump when enough grease comes out of the anode drill holes on top of the prop (Fig.8).

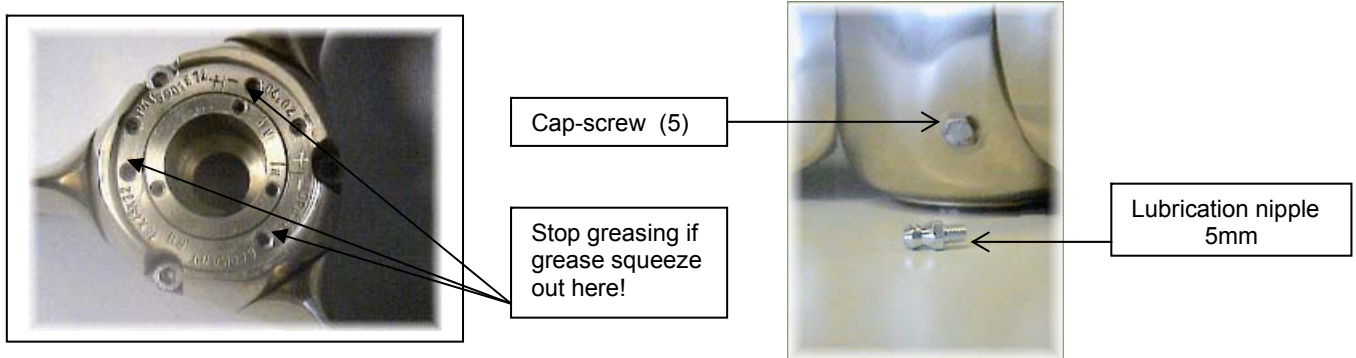


Fig.8

Factory supplied special grease EP/SAL is recommended and available from your VARIPROP distributor.
Avoid regular white grease (sterntube-grease) !

Shock-absorber: The integrated shock-absorber reduces unpleasant operating noises. The pitch stops are substantially protected against wear. At rotating the blades by hand, you can feel the shock-absorber function. This “heavy” turning at the absorber area is normal and necessary for the function !

Make sure that you always keep the zinc anode in good condition. The Variprop must be protected by a lot of zinc, so also use a zinc anode onto the shaft if possible. Use fine sandpaper to clean the aft of the end boss and the forward face of the VARIPROP-anode to give the zinc good contact with the propeller.

Tools supplied with each VARIPROP DF-128:

- 1x small plastic bottle with Loctite low (pink)
- 1x grease nipple 5mm
- 1x allen key 3mm 1x allen key 4mm
- 1x allen key 5mm 1x allen key 6mm
- 1x allen key 8mm

necessary tools for pitch adjustment

- 1x allen key 4mm
- 1x allen key 8mm

necessary tools for removing the VARIPROP DF-128

- 1 open-end- / box spanner 17mm 1 allen key 3mm
- 1 open-end- / box spanner 24mm 1 allen key 5mm
- 1 open-end- / box spanner 50mm 1 allen key 6mm

Torque settings for the prop-nut

(page2, Fig.1, part-no.4)

Standard – thread

M 14 x 2 UNC 1/2 “-13	40 Nm / 30 ft/lb
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M 16 x 2 BSW 5 / 8 “ – 11 UNC 5 / 8 “ - 11	60 Nm / 45 ft/lb
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M 20 x 2,5 BSW 3 / 4 “ – 10 UNC 3 / 4 “ - 10	125 Nm / 95 ft/lb
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UNC 7 / 8 “-9	160 Nm / 115 ft/lb
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M 24 x 3 BSW 1 “ - 8 UNC 1 “ - 8	210 Nm / 155 ft/lb
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M 27 x 3	315 Nm / 230 ft/lb
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M 30 x 3,5 UNC 1 1/8” - 7 BSW 1 1/8” - 7	350 Nm / 255 ft/lb
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UNC 1 1/4” “- 7	350 Nm / 255 ft/lb
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UNC 1 1/2” - 6	390 Nm / 290 ft/lb
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Fine - thread

M 14 x 1,5 BSF 1/2 “ - 16	40 Nm / 30 ft/lb
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M 16 x 1,5 BSF 5 / 8 “ – 14 UNC 5 / 8 “ - 18	70 Nm / 50 ft/lb
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M 20 x 1,5 BSF 3 / 4 “ – 12 UNC 3 / 4 “ - 16	135 Nm / 100 ft/lb
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M 24 x 2 BSF 1 “ - 10 UNF 1 “ - 12	225 Nm / 165 ft/lb
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M 30 x 2	430 Nm / 315 ft/lb
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M 36 x 3	490 Nm / 360 ft/lb
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SUBJECT TO TECHNICAL ALTERATIONS; ERRORS and MISPRINTS

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Controllable Pitch Propeller**

with type designation(s)

Feathering Propeller series VP, GP, DF

Issued to

**S.P.W. GmbH Sail Propeller- und Wellenbau
Bremerhaven, Germany**

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – Yachts****DNV GL rules for classification – High speed and light craft****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Hamburg** on **2021-02-16**for **DNV GL**This Certificate is valid until **2026-02-15**.DNV GL local station: **Hamburg – CMC North/East**Approval Engineer: **Olaf Richter****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.

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Product description

Feathering propellers

Application/Limitation

For sailing ship propulsion.

Type	Blades	Propeller diameter max. [mm]	Engine power max. [kW]	Propeller torque max. [Nm]	Propeller speed max. [rpm]
VP-64	2, 3	455	22	150	1400
VP-76	2, 3	560	55	375	1400
VP-104	3	660	82	653	1200
DF-80, GP-80	2, 3, 4	432	22	150	1400
DF-107, GP-107	2, 3, 4	508	59	402	1400
DF-112, GP-112	3, 4	635	88	700	1200
DF-128	3, 4	715	103	894	1100
DF-140	3, 4	762	132	1261	1000
DF-160	3	864	202	2030	950
DF-180	3	914	257	2727	900
DF-190	4	864	202	2030	950
DF-210	4	914	257	2727	900
DF-230	3	1016	308	3676	800
DF-260	4	1016	308	3676	800
DF-280	3	1270	404	5144	750
DF-310	4	1270	404	5144	750
DF-380	4	1575	550	12500	750

Type Approval documentation

Drw No	Rev	Title	Status
-	2020-11-21	Drawing list VP64	DI Discarded**
-	2020-11-21	Drawing list GP112	DI Discarded**
-	2010-01-19	Document List of VariProfile	DI Discarded**
-	-	DF-380 part list	DI Discarded**
-	-	Material data propeller hub	FI For Inf.
-	-	Propeller assembly	DI Discarded**
-	-	Variprofile Broschüre	DI Discarded**
-	2020-11-21	Drawing list VP76	DI Discarded**
-	-	Blade sections DF-xx 12-50"	AP Approved
-	-	Variprop brochure	DI Discarded**
-	-	Assembly drawings + blade sections DF-xx	AP Approved
Anode DF-380	01	Anode DF-380	DI Discarded**
Anode VP104-02	01	Anode VP-104	DI Discarded**
Anode VP64-02	04	Anode / VP-64	DI Discarded**
Anode VP76-02	02	Anode / VP-76	DI Discarded**
Anschlag 104-RH-04	06	Anschlag VP-104 3 Blatt	AP Approved
Anschlag VP64-04	08	Anschlag VP-64	AP Approved
Anschlag VP76-04	06	Anschlag v2.1 VP-76	AP Approved
Assembly DF-380-4bl-00	00	Assembly DF-380	AP Approved

Assembly Exploded_VP76-2bl-04	06	Assembly VP-76 v3.0/GL	AP Approved
Assembly FlgDF-380-50-00	00	Flügel DF-380	FI For Inf.
Assembly_Exploded VP-104-3bl-03	03	Assembly VP-104	AP Approved
Assembly_Exploded-GP-107-3bl	-	Assembly_Exploded GP-107-3blade-19	AP Approved
Assembly_VP64-04_exploded-01	12	Assembly VP-64 v3.0/GL	AP Approved
Assembly-1 DF-380-50-00 sh.1	00	Assembly DF-380	AP Approved
Assembly-2 DF-380-50-00 sh.2	00	Assembly DF-380	AP Approved
Assembly-3 DF-380-50-00 sh.3	00	Assembly DF-380	AP Approved
Assembly-GP-80-3bl	-	Assembly_Exploded-GP-80-3bl	AP Approved
Connect-plate-05	07a	Connecting Plate v3.0/GL VP-64	AP Approved
Connect-plate-VP104-04	04/GL	Connecting Plate VP-104	AP Approved
Connect-plate-VP76-05	07a	Connecting plate v3.0/GL VP-76	AP Approved
DF380_Flg-62-00-flat	2008-07-09	DF380_Flg-62-00 VariProp symm. section	AP Approved
DIN 913 - M30 x 120	00	Steigungsverstellungsschraube DF-380	FI For Inf.
FlgDF_schnitt-380-62-00	-	Flügelschnitt DF-380/48-62"	AP Approved
FlgDF-80GP-16	01	Flügel DF-80&107-GP/Serie	AP Approved
FlgGP-112-20-06a-flat	01	Flügel DF-112SE Vers.GP	AP Approved
FlgGP-112-20-06a-flat	-	Flügel DF-112_GP	AP Approved
FlgSchnitt-GP-112-20_24-01	2020-02-13	Flügelkontur DF-112 / dia. 20-24"	AP Approved
FlgVerzGP-112-01	01	Flügel-Zahnrad GP-112	AP Approved
Flg-VP104-Schnitt-26-00	00	Flügelschnitt VP-104 26"	AP Approved
Flg-VP104-Schnitt-26-01	00	Flügelschnitt VP-104 26"	AP Approved
GearAc_1818-04aRH	07	Nabenverzahnung VP-64 v3.0/GL	AP Approved
GearAc_2424-04RH	04	Nabenverzahnung VP-76 v3.0	AP Approved
GearAc_2727-03RH	03	Nabenverzahnung VP-104	AP Approved
GearPas_1818-02aLH	06	Flügelverzahnung VP-64 v3.0/GL	AP Approved
GearPas_2424-03LH	05	Flügelverzahnung VP-76 v3.0	AP Approved
GearPas_2727-01LH	03a	Flügelverzahnung VP-104	AP Approved
Geob104-3bl-00	01	VP-104 3 Blatt Gehäuse Oberteil	AP Approved
Geob112_GP-3bl	00	DF-112_GP 3 Blatt Gehäuse Oberteil	AP Approved
Geob112_GP-4bl	00	DF-112_GP 4 Blatt Gehäuse Oberteil	AP Approved
Geob380-4bl-01	01	Gehäuse-Oberteil 4 Blatt DF-380	AP Approved
Geob64-2bl-02	06	VP-64 2 Blatt Gehäuse Oberteil	AP Approved
Geob64-3bl-02	07	VP-64 3 Blatt Gehäuse Oberteil	AP Approved
Geob76-2bl-01	07	VP-76 2 Blatt Gehäuse Oberteil	AP Approved
Geob76-3bl-01	05	VP-76 3 Blatt Gehäuse Oberteil	AP Approved
Geut104-3bl-02	03	VP-104 3 Blatt Gehäuse Unterteil	AP Approved
Geut112_GP-3bl	00	DF-112_GP 3 Blatt Gehäuse Unterteil	AP Approved
Geut112_GP-4bl	00	DF-112_GP 4 Blatt Gehäuse Unterteil	AP Approved
Geut112_SD-4bl	00	DF-112_SD 4 Blatt Gehäuse Unterteil SD	AP Approved
Geut112-3bl	01a	DF-112_GP/SD 3 Blatt Gehäuse Untert. SD	AP Approved
Geut380-4bl-Sundin	01	Gehäuse-Unterteil 4 Blatt DF-380	AP Approved
Geut64-2bl-01	06a	VP-64 2 Blatt Gehäuse Unterteil	AP Approved
Geut64-3bl-01	07a	VP-64 3 Blatt Gehäuse Unterteil	AP Approved
Geut76-2bl-01	06a	VP-76 2 Blatt Gehäuse Unterteil	AP Approved
Geut76-3bl-01	05a	VP-76 3 Blatt Gehäuse Unterteil	AP Approved
GP112-20_24-01	2020-02-13	Flügelkontur DF-112 / dia. 20-24"	AP Approved
GP112-20-06a_DNV	01	Assembly_Exploded_GP-112-3bl	AP Approved
GP112-24-01	2020-11-19	Flügelkontur DF-112 / dia. 24"	AP Approved
Hub-25_VP64-04a	06a	Hub-25 VP-64	AP Approved

Job Id: **262.1-034406-1**
Certificate No: **TAM000017G**

Hub-30_VP64-03	05a	Hub-30 VP-64	AP Approved
Hub-30_VP76-02	04a	Hub-30 VP-76	AP Approved
Hub-45_VP104-02	02/GL	Hub-45 VP-104	AP Approved
Kappe DF-380-00	01	Kappe DF-380	FI For Inf.
Nabe DF-380-01	01	Nabe DF-380	AP Approved
NabeDF112-02	04	Nabe DF-112	AP Approved
PropNut DF-380-00	00	Prop.-Nut DF-380	FI For Inf.
Puller DF-380-00	00	Abzieher f. DF-380	DI Discarded**
VP104_Flg-20-01_flat	2009-02-11	Blade VP-104 20"	AP Approved
VP104_Flg-26-01_flat	2009-04-15	Blade VP-104 26"	AP Approved
VP64_Flg-13-03_flat	2008-05-16	Blade VP-64 13"	AP Approved
VP64_Flg-18-03_flat	2008-05-16	Blade VP-64 18"	AP Approved
VP76_Flg-17-01_flat	2008-06-10	Blade VP-76 17"	AP Approved
VP76_Flg-22-01_flat	2008-06-25	Blade VP-76 22"	AP Approved

Tests carried out

None.

Marking of product

Manufacturer's name or trademark. Type number designation.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform an assessment after 2 years and after 3.5 years to verify that the conditions of the type approval are complied with. A renewal assessment will be performed at renewal of the certificate.

The objective of the Periodical Assessment is to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued. The main scope of the Periodical Assessment will normally include:

- Verification of the Type Approval applicant's production and quality system w.r.t. ensuring continued consistent production of the Type Approved products at the Type Approval applicant's own premises and at other companies that are given the responsibility for manufacturing of the products
- Review of the Type Approval documentation and that this is still used as basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking

In cases 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.

When a Type Approved product is manufactured at other companies, the Type Approval applicant takes the sole responsibility for the conformity of the product to the applicable requirements.

END OF CERTIFICATE.