SIDE-POWER 5288 Stabilizer Systems User Guide

Contents

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Product Information

The Side-Power Stabilizer System is a patented product designed to increase comfort on board by stabilizing the rolling motion of a yacht. It consists of two underwater moveable fins that are hydraulically powered and electronically gyro controlled. The fins are located on shaft and actuator assemblies, penetrating through each side of the yacht's hull. The system utilizes the Side-Power S-link (CanBus) network system for control and can stabilize the yacht's rolling motion at various speeds and sea conditions, as well as at anchor (optional).

General Safety Precautions

- Read the entire user manual thoroughly before operating the Stabilizer System.
- Ensure necessary knowledge of the product and safety measures.
- Follow all warnings and precautions mentioned in the manual to avoid personal injury or system failure.

Product Usage Instructions

Safety:

- Before activating the stabilizer system, ensure that:
  - The stabilizer system is always kept active when running theboat in planning or fast semi-planning mode, as well as when on calm water.
  - If the fins are not in the locked position, reverse the boat in minimal speed.

Use:

Front screen:

- Fin status: Indicates the number of fins (2 or 4).

- Roll angle: Displays the current roll angle.
- Speed status: Shows the current speed status.
- Home screen return: Returns to the home screen.
- Panel ON/OFF: Activates or deactivates the panel.
- Panel brightness: Adjusts the brightness of the panel.
- Stabilizers ON/OFF At Anchor (Activation): Activates or deactivates the stabilizers at anchor.

Status screen:

- Green light: Indicates GPS availability, powerpack VFD enabled, and powerpack VFD ready.
- Red light: Indicates that the system is not ready.

Gain screen:

- Possible to adjust the system’s reaction to roll when cruising.
- Possible to adjust the system’s reaction to roll when at anchor.

Fins screen (2 or 4 fin system):

- Shows the status of the fins, whether they are disabled or enabled.
- Fins can be disabled/enabled from this screen.

ACTIVATE Stabilizers:

- From the HOME menu, touch STABILIZER.

Fins are locked and the system in OFF status

Activate Stabilizers to CRUISING mode:

- Touch ON/OFF button to start the system.

Stabilizers are active in CRUISING mode:

- Usually in use from 3/4 knots and up.

Note: The system automatically changes between Cruising and At Anchor modes when both are activated.

Information and Safety

Thank you for selecting a Side-Power Stabilizer System. We hope your Stabilizer System will meet your expectations and increase your comfort level on board.
This guide is intended as a quick guide for the operator of the vessel. More detailed instructions including drawings, schematics, and diagrams are available in the installation instructions and service manual. Sleipner Motor AS is not responsible for injury or damage as a result of the use of the Stabilizer system.

General description

The Side-Power Stabilizer System consists of two underwater moveable fins located on shaft and actuator assemblies penetrating through each side of the yachts hull and hydraulically powered with a Side-Power compact Hydraulic System. The system is electronically gyro-controlled utilizing the Side-Power S-link (CanBus) network system & stabilizes the yacht's rolling motion in the water at various speeds and sea conditions or at anchor (optional).

General Information, Safety Precautions and Warnings
Prior to operation and use it is important the operator reads this manual thoroughly to ensure necessary knowledge of the product and safety measures.

WARNING!
Information given or illustrated as a WARNING may cause personal injury if it is disregarded.

IMPORTANT!
Information given or illustrated as IMPORTANT may cause system and property failure if it is disre-garded.

NOTE!
Information given or illustrated as a NOTE will facilitate correct operation and use of the Side-Power system.

Safety

Before activating the stabilizer system, ensure that:
(It is recommended that following notes are included in the boats operator manual)

WARNING!

- There are no people in the water swimming around the boat
- There are no risk of the fins hitting anything, the dock, dock mooring lines or any other submerged objects close to the boat when they start moving.
- There are no people close to the actuator mechanisms.

IMPORTANT!

- Always ensure that there are no leakages, hydraulic oil level is correct and cooling pump is running. Always check/monitor system temperature and pressure from the panel when system is running.
- You either have one or both main engines running, or an alternative hydraulic power source (like the AC powerpack).

Always keep the stabilizer system active when running the boat in planning or "fast" semi-planning mode – also when on calm water.

- The reason for this is to perform their stabilizing function to the required level, the fins are a large part of the boats directional and heel stability, especially at high speeds when the boats wet surfaces and direct hull forces are reduced. If you leave the fin stabilizer system off so the fins are left in a fixed position, this can make the boat behave differently then expected at high speeds.
- With the stabilizer system active, it will ensure that the boats behaviour is predictable and as comfortable as

possible at all times, improving comfort also on calm water.

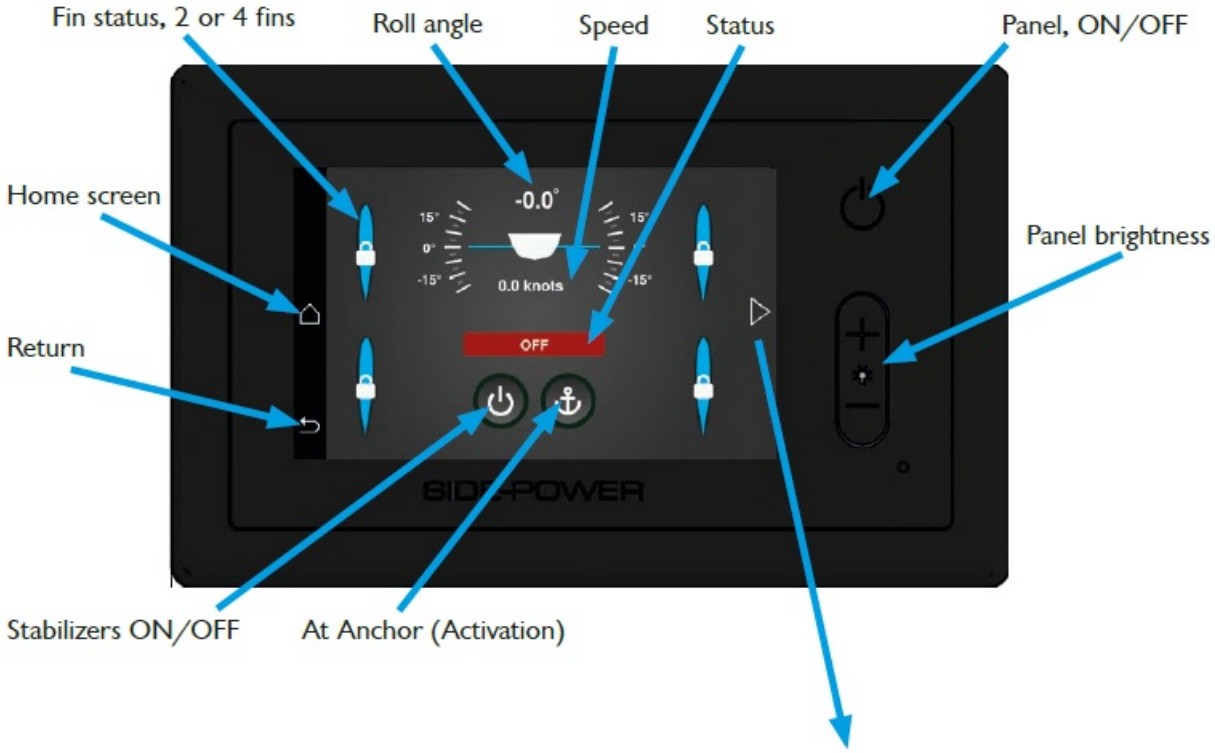
- If, due to a malfunction or other reason you are unable to run with the stabilizers active, we strongly recommend that you run at a maximum speed where the boat is not planning so that the boats own directional and heel stability is the dominant factor.

Reverse the boat in minimal speed if the fins are not in LOCKED position

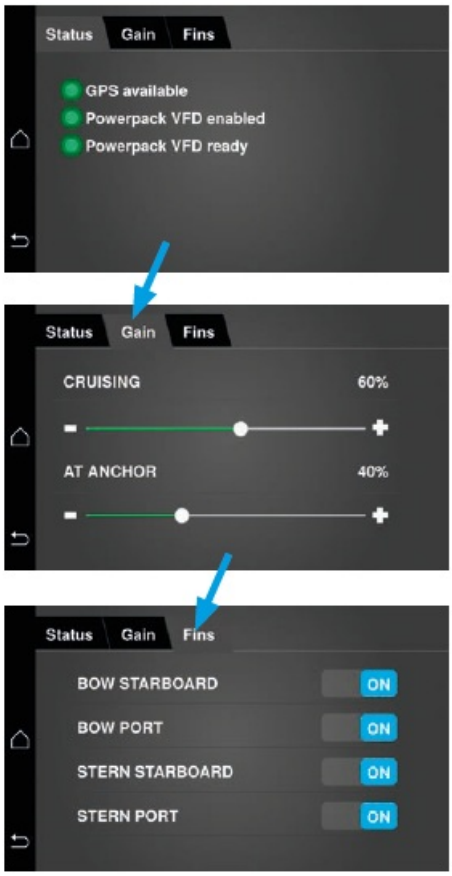
The fins should automatically center and lock if you put the boat in reverse, but if this should not happen for some reason (hydraulic failure, reverse sensor malfunction etc.) it is important that you only reverse the boat as slow as possible.

Use

Front screen



Status screen (Touch arrow/triangle on the right) Green light is indicating:



- GPS available
- Powerpack VFD enabled
- Powerpack VFD ready
- Red light is indicating not ready

Gain screen

- Possible to adjust the system’s reaction to roll when cruising
- Possible to adjust the system’s reaction to roll when at anchor

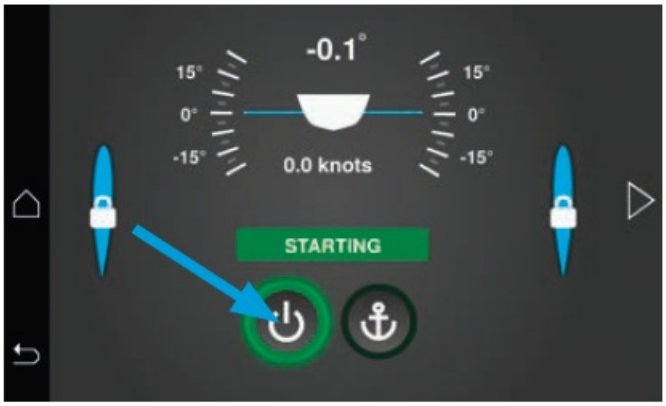
Fins screen (2 or 4 fin system)

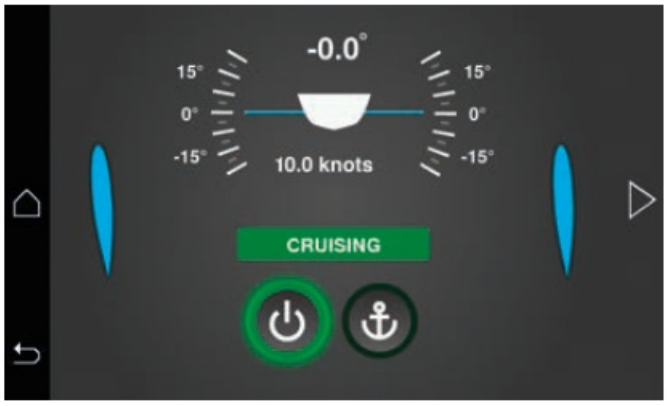
- Showing fins status, disabled or enabled.
- Fins can be disabled/enabled from this screen

ACTIVATE Stabilizers


STABILIZER
HYDRAULIC SYSTEM
SETTINGS
STARTUP AND MAINTENANCE


0.0°
15°
0°
15°
15°
0°
-15°
0.0 knots
OFF


-0.1°
15°
0°
-15°
15°
0°
-15°
0.0 knots
STARTING

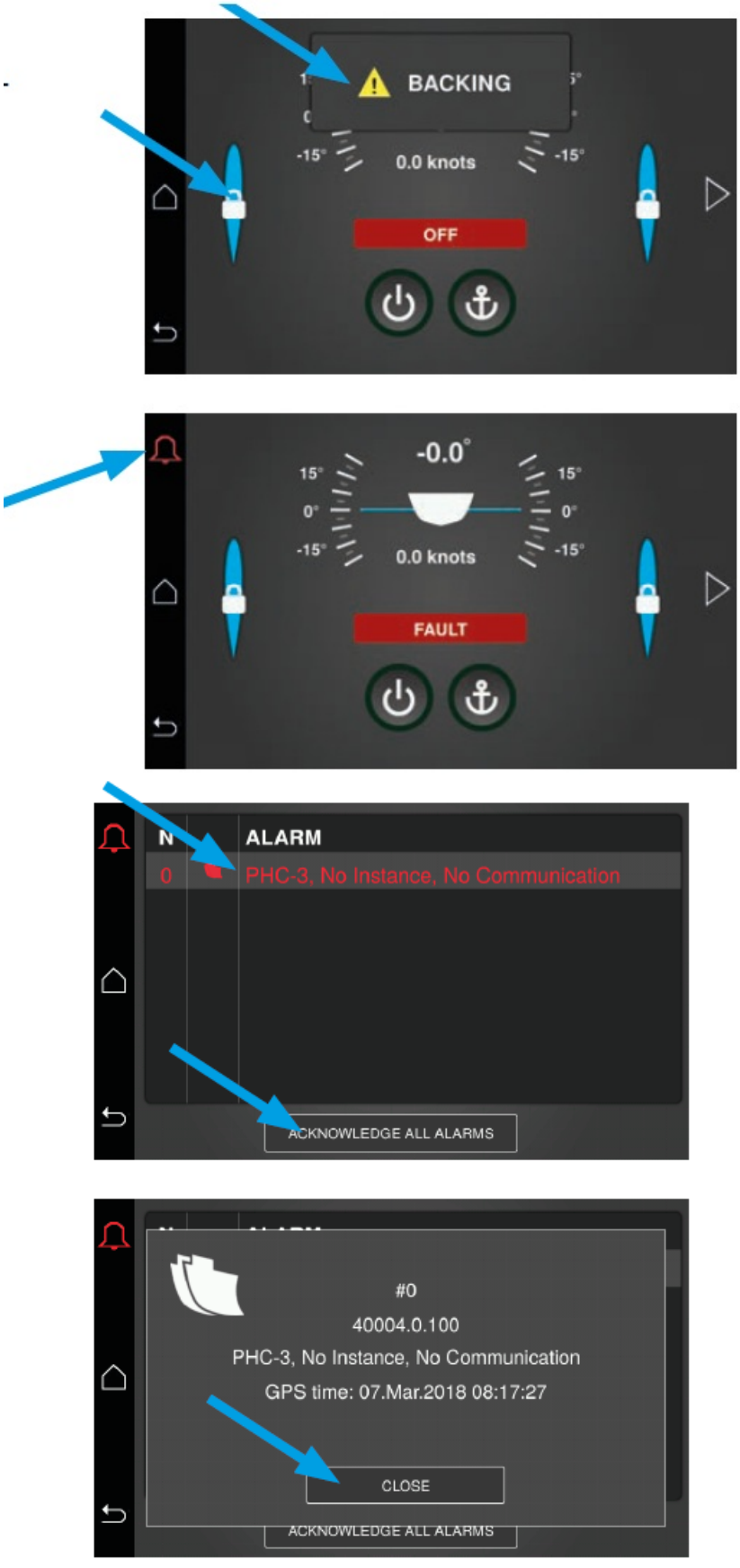


From HOME menu:
Touch STABILIZER

- Fins are locked and system in OFF status
- Activate Stabilizers to CRUISING mode:
  Touch ON/OFF button – system is starting
- Stabilizers are active in CRUISING mode
  Usually in use from 3/4 knots and up.
  Note! System change automatically between Cruising/At Anchor when both is activated.
- Activate Stabilizers to AT ANCHOR mode:
  Touch ANCHOR button – system is starting and running Usually in use from 0 to 3/4 knots.
  To turn At Anchor OFF, touch Anchor again.
  Note! System change automatically between Cruising/At Anchor when both is activated.
- Turn system OFF:
  Touch ON/OFF button – fins are centred, locked and not active

BACKING the yacht

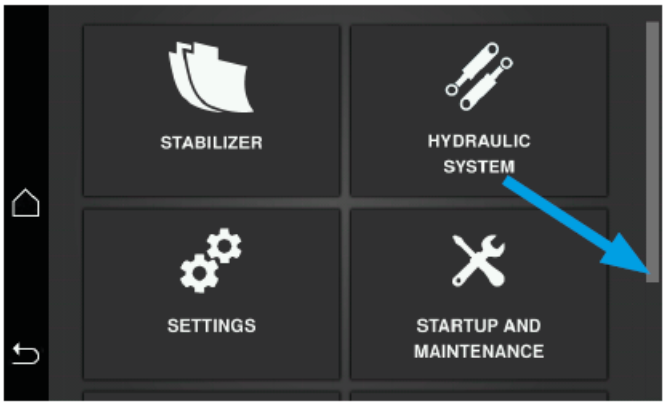
When the yacht/gearbox is put in reverse the fins will automati-cally be centred and locked. BACKING will be indicated on the screen

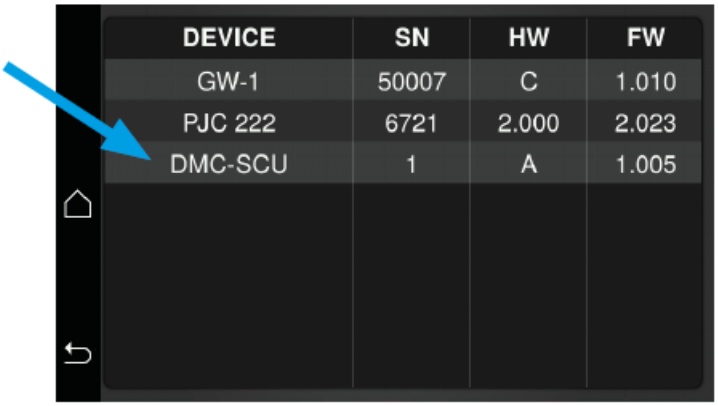


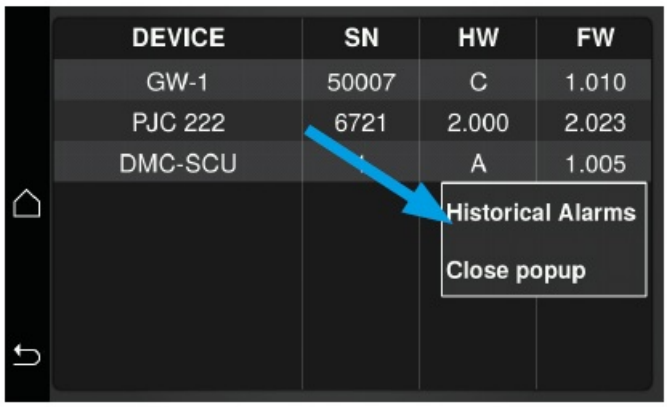
ALARMS

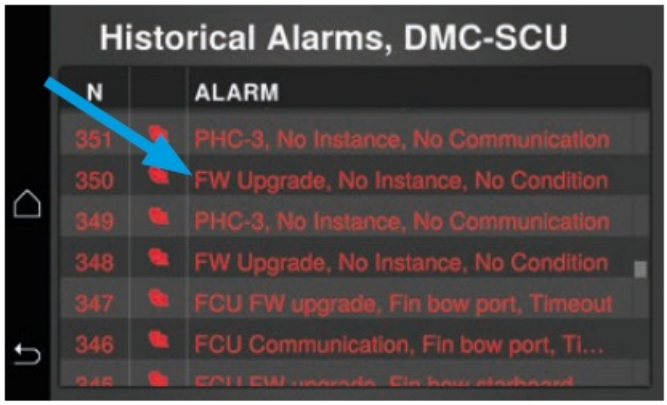
1. Alarms are indicated in upper left corner of the screen Touch the red alarm bell to view alarm list
2. Alarm list shows current alarms, with alarm description
   To acknowledge alarm(s) touch ACKNOWLEDGE ALARMS in the bottom of the screen
3. Touch the active alarm for more details and Correct the cause of the alarm
   Alarm codes and troubleshooting actions are shown in user man-ual. Alarm actions will also be presented in this screen. Contact Side-Power representative.
   Touch close to finish alarm acknowledgement
4. All alarms are acknowledged

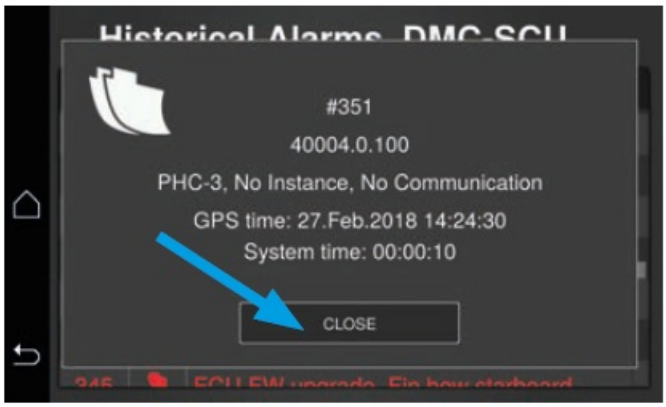
VIEW HISTORICAL ALARMS











- Go to home page – Scroll to System devices – Touch System devices
- Touch desired device(s)
- Historical Alarms pop(s) up – Touch Historical alarms
- Historical Alarms is shown – Touch Alarm(s) to view more information
- Alarm details are shown – Touch close to return to list.

Alarms and System Monitoring

If an alarm occurs so the stabilizer system is not running, but the fins are centred and locked, you can operate the boat normally, remembering the general warning about high speeds and inactive stabiliz-ers. See Alarm list and boat handling restrictions in table below for more details.

WARNING!
If the fins are NOT centred and locked, do NOT run forward in more than the minimum necessary steering speed

BOAT HANDLING RESTRICTIONS	**L1**	**L2**	**L3**	**L4**
Remember the general warning about high speed running without active stabilizers	**X**	**X**	**X**	**X**
Do not reverse the boat in more than absolute minimal speed		**X**	**X**	**X**
Do not run forward in more than the minimum necessary steering speed		**X**	**X**	**X**
If you have severely overheating oil – do not operate any hydraulics – ru n main engines (if pumps are connected) at less load while giving the oil time to cool down.			**X**	
If you are running out of oil in your tank – beware that the pumps will be destroyed if run dry and can then also cause other damage to the power source driving them. If you have to run engines with pumps directly fitted , disconnect mechanically the pump first so that it does not pump. If you have severely overheating oil – do not operate				**X**

Fault Code	Description	Cause	Action	Boat handl ing
100.0.0	System Error – –	Internal Error	-Consult Side-Power dealer	L2
201.0.200	NMEA2000 Transmissi on parameter – Timeo ut	No NMEA2000 (pgn127493) transmission message received f or 2seconds.	-Check if GW-1 status i s ok by checking the G W-1 status LED (See G W-1 user manual). -Check cabling	L1
10101.0.11	Device CPU Temp – L evel High	CPU temperature higher than 85 degrees.	-Ventilate the room wer e the ECU is sitting. -Consult Side-Power dealer	L1
35000.0.20 0	GPS signal lost – Time out	No GPS data from GW-1 receive d for 3 seconds	-Check if GW-1 status i s ok by checking the G W-1 status LED (See G W-1 user manual). – Check cabling	L1
40001.0.20 1	SCU Sensor board fau lt 1 – INIT FAIL	Sensor board fault.	-Consult Side-Power dealer	L2

40001.0.202	SCU Sensor board fault 1 – READ FAIL	Sensor board fault.	-Consult Side-Power dealer	L2
40002.0.201	SCU Sensor board fault 2 – INIT FAIL	Sensor board fault.	-Consult Side-Power dealer	L2
40002.0.202	SCU Sensor board fault 2 – READ FAIL	Sensor board fault.	-Consult Side-Power dealer	L2
40003.0.201	SCU Sensor board fault 3 – INIT FAIL	Sensor board fault.	-Consult Side-Power dealer	L2
40003.0.202	SCU Sensor board fault 3 – READ FAIL	Sensor board fault.	-Consult Side-Power dealer	L2
40004.0.24	PHC-3 – Fault	Detected fault on PHC-3	-Check PHC-3 faults for more information	L2
40004.0.100	PHC-3 – No Communication	PHC-3 Communication lost for more than 500ms	-Check if PHC-3 is powered and is working -Check S-Link cabling	L2
40004.0.200	PHC-3 – Timeout	PHC-3 startup timed out. Trigger when startup takes longer than 60 seconds	-Check if PHC-3 is able to build up the pressure. -Check PHC-3 faults for more information.	L2
40004.0.210	PHC-3 – DEVICE IN MANUAL MODE	Trigger when the SCU try to start up PHC 3 and the PHC-3 is running in manual mode.	-Stop running the PHC-3 in manual mode	L2

40006.0.24	SCU Sensor board fault 4 – Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40006.0.150	SCU Sensor board fault 4 – ID Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40006.0.151	SCU Sensor board fault 4 – Self-Test Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40006.0.203	SCU Sensor board fault 4 – Not Calibrated	Sensor board fault.	-Consult Side-Power dealer	L2
40007.0.100	SCU Sensor board fault 5 – No Communication	Sensor board fault.	-Consult Side-Power dealer	L2
40007.0.150	SCU Sensor board fault 5 – ID Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40008.0.24	SCU Sensor board fault 6 – Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40009.0.150	SCU Sensor board fault 7 – ID Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40009.0.151	SCU Sensor board fault 7 – Self-Test Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40010.0.150	SCU Sensor board fault 8 – ID Fault	Sensor board fault.	-Consult Side-Power dealer	L2
40011.0.150	SCU Sensor board fault 11 – ID Fault	Sensor board fault.	-Consult Side-Power dealer	L2

40012.100.51	FCU Current Fin bow port Current High	Current to the FCU is too high. Trigger at 10A.	-Check cabling between SCU and FCU for short circuit.	L2
40012.101.51	FCU Current Fin bow starboard Current High	Current to the FCU is too high. Trigger at 10A.	-Check cabling between SCU and FCU for short circuit.	L2
40012.102.51	FCU Current Fin stern port Current High	Current to the FCU is too high. Trigger at 10A.	-Check cabling between SCU and FCU for short circuit.	L2
40012.103.51	FCU Current Fin stern starboard Current High	Current to the FCU is too high. Trigger at 10A.	-Check cabling between SCU and FCU for short circuit.	L2

45000.100.21	FCU Tuning Fin bow port Failed	Tuning sequence has failed. Trigger if fin movement is less than 50 degrees.	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys.	L2
45000.101.21	FCU Tuning Fin bow starboard Failed	Tuning sequence has failed. Trigger if fin movement is less than 50 degrees.	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys.	L2
45000.102.21	FCU Tuning Fin stern port Failed	Tuning sequence has failed. Trigger if fin movement is less than 50 degrees.	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys.	L2

45000.103.21	FCU Tuning Fin stern starboard Failed	Tuning sequence has failed. Trigger if fin movement is less than 50 degrees.	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys.	L2
45001.100.21	FCU Encoder Fin bow port Failed	Encoder fault	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys. -Check if something is blocking the actuators -Check if all the hydraulics mounted correctly to the actuators. -Check if a PHC-3 fault is present.	L2
45001.100.22	FCU Encoder Fin bow port Out off position	Encoder position is outside the end stop position.	-Run the detect end stop sequence. -Check encoder belt and pulleys. -Consult Side-Power dealer	L2

45001.101.21	FCU Encoder Fin bow starboard Failed	Encoder fault	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys. -Check if something is blocking the actuators -Check if all the hydraulics mounted correctly to the actuators. -Check if a PHC-3 fault is present.	L2
45001.101.22	FCU Encoder Fin bow starboard Out off position	Encoder position is outside the end stop position.	-Run the detect end stop sequence. -Check encoder belt and pulleys. -Consult Side-Power dealer	L2
45001.102.21	FCU Encoder Fin stern port Failed	Encoder fault	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys. -Check if something is blocking the actuators -Check if all the hydraulics mounted correctly to the actuators. -Check if a PHC-3 fault is present.	L2

45001.102.22	FCU Encoder Fin stern port Out off position	Encoder position is outside the end stop position.	-Run the detect end stop sequence. -Check encoder belt and pulleys. -Consult Side-Power dealer	L2
45001.103.21	FCU Encoder Fin stern starboard Failed	Encoder fault	-Run bleeding to get rid of air in the hydraulic system -Check encoder belt and pulleys. -Check if something is blocking the actuators -Check if all the hydraulics mounted correctly to the actuators. -Check if a PHC-3 fault is present.	L2

45001.103.22	FCU Encoder Fin stern starboard Out off position	Encoder position is outside the end stop position.	-Run the detect end stop sequence. -Check encoder belt and pulleys. -Consult Side-Power dealer	L2
45003.100.22	FCU Communication Fin bow port Out off position	FCU communication lost. Trigger if no FCU is detected for 25 seconds at startup or after 1.5 seconds with no communication during normal operation. .	-Check cabling between SCU and FCU	L2

45003.101.22	FCU Communication Fin bow starboard Out off position	FCU communication lost. Trigger if no FCU is detected for 25 seconds at startup or after 1.5 seconds with no communication during normal operation. .	-Check cabling between SCU and FCU	L2
45003.102.22	FCU Communication Fin stern port Out off position	FCU communication lost. Trigger if no FCU is detected for 25 seconds at startup or after 1.5 seconds with no communication during normal operation. .	-Check cabling between SCU and FCU	L2
45003.103.22	FCU Communication Fin stern starboard Out off position	FCU communication lost. Trigger if no FCU is detected for 25 seconds at startup or after 1.5 seconds with no communication during normal operation. .	-Check cabling between SCU and FCU	L2
45006.100.13	FCU Proportional Valve 1 Fin bow port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45006.100.51	FCU Proportional Valve 1 Fin bow port Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45006.101.13	FCU Proportional Valve 1 Fin bow starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45006.101.51	FCU Proportional Valve 1 Fin bow starboard Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2

45006.102.13	FCU Proportional Valve 1 Fin stern port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45006.102.51	FCU Proportional Valve 1 Fin stern port Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45006.103.13	FCU Proportional Valve 1 Fin stern starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45006.103.51	FCU Proportional Valve 1 Fin stern starboard Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45007.100.13	FCU Proportional Valve 2 Fin bow port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45007.100.51	FCU Proportional Valve 2 Fin bow port Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45007.101.13	FCU Proportional Valve 2 Fin bow starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45007.101.51	FCU Proportional Valve 2 Fin bow starboard Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45007.102.13	FCU Proportional Valve 2 Fin stern port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2

45007.102.51	FCU Proportional Valve 2 Fin stern port Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45007.103.13	FCU Proportional Valve 2 Fin stern starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45007.103.51	FCU Proportional Valve 2 Fin stern starboard Current High	Current through valve is too high. Trigger at 3.75A	-check for short circuit	L2
45010.100.200	FCU Centering normal Fin bow port Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45010.101.200	FCU Centering normal Fin bow starboard Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2

45010.102.200	FCU Centering normal Fin stern port Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45010.103.200	FCU Centering normal Fin stern starboard Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2

45011.100.200	FCU Centering fast Fin bow port Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45011.101.200	FCU Centering fast Fin bow starboard Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45011.102.200	FCU Centering fast Fin stern port Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45011.103.200	FCU Centering fast Fin stern starboard Timeout	FCU did not manage to center the fin within 10seconds.	-Check if a PHC-3 fault is present. -Check encoder belt and pulleys.	L2
45012.100.200	FCU FW upgrade Fin bow port Timeout	SCU failed to upgrade the FCU FW.	-Check cabling between SCU and FCU -Consult Side-Power dealer	L2
45012.101.200	FCU FW upgrade Fin bow starboard Timeout	SCU failed to upgrade the FCU FW.	-Check cabling between SCU and FCU -Consult Side-Power dealer	L2
45012.102.200	FCU FW upgrade Fin stern port Timeout	SCU failed to upgrade the FCU FW.	-Check cabling between SCU and FCU -Consult Side-Power dealer	L2

45012.103.200	FCU FW upgrade Fin stern starboard Timeout	SCU failed to upgrade the FCU FW.	-Check cabling betwee n SCU and FCU -Consult Side-Power dealer	L2
45013.100.13	FCU Float valve Fin bo w port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45013.100.16	FCU Float valve Fin bo w port Short Circuit	Current through valve is too high . Trigger at 1.5A	-check for short circuit	L2
45013.101.13	FCU Float valve Fin bo w starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45013.101.16	FCU Float valve Fin bo w starboard Short Circuit	Current through valve is too high . Trigger at 1.5A	-check for short circuit	L2
45013.102.13	FCU Float valve Fin st ern port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45013.102.16	FCU Float valve Fin st ern port Short Circuit	Current through valve is too high . Trigger at 1.5A	-check for short circuit	L2
45013.103.13	FCU Float valve Fin st ern starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45013.103.16	FCU Float valve Fin st ern starboard Short Circuit	Current through valve is too high . Trigger at 1.5A	-check for short circuit	L2
45014.100.13	FCU Lock valve Fin bo w port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2

45014.100.16	FCU Lock valve Fin bow port Short Circuit	Current through valve is too high. Trigger at 1.5A	-check for short circuit	L2
45014.101.13	FCU Lock valve Fin bow starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45014.101.16	FCU Lock valve Fin bow starboard Short Circuit	Current through valve is too high. Trigger at 1.5A	-check for short circuit	L2
45014.102.13	FCU Lock valve Fin stern port Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45014.102.16	FCU Lock valve Fin stern port Short Circuit	Current through valve is too high. Trigger at 1.5A	-check for short circuit	L2
45014.103.13	FCU Lock valve Fin stern starboard Open Circuit	No current detected through the valve when the valve is turned on.	-Check for open circuit	L2
45014.103.16	FCU Lock valve Fin stern starboard Short Circuit	Current through valve is too high. Trigger at 1.5A	-check for short circuit	L2

Fault Code	Description	Cause	Action
10500.0.10	PHC Oil Level – Level Low	Hydraulic oil level is low	-Limit use of thruster -Inspect hydraulic oil level -Check system for leaks and refill hydraulic oil
10500.0.13	PHC Oil Level – Open Circuit	Analog oil level sensor open circuit	-Sensor not connected or wire break. -Verify sensor type in parameter 0201 -Disconnect sensor and measure that sensor resistance value is in range 0-180ohm.

10501.0.11	PHC Oil Temp – Level High	Oil temperature higher than 75° C (167°F)	-Limit use of thruster to prevent temperature to rise. -Check if cooling pump is running and there is cooling water flow. -Inspect seawater filter -Verify that cooling pump is enabled in parameter 0301
10501.0.13	PHC Oil Temp – Open Circuit	Analog oil temp sensor open circuit	-Sensor not connected or wire break. – Disconnect sensor and measure that sensor resistance value is in range 104ohm-147Kohm -Wrong sensor is defined in parameter 0201
10501.0.16	PHC Oil Temp – Short Circuit	Analog oil temp input short circuit	-Input shorted to GND, check wiring/sensor -Disconnect sensor and measure that sensor resistance value is in range 104ohm-147Kohm
10502.0.13	PHC Stablizier Pressure – Open Circuit	Stabilizer pressure sensor open circuit	-Sensor not connected or wire break. -System incorrectly configured with stabilizer, parameter 1001 -Replace sensor
10502.0.16	PHC Stablizier Pressure – Short Circuit	Stabilizer pressure sensor short circuit	-Wires shorted or sensor defective, check wiring/sensor -Replace sensor
10502.0.19	PHC Stablizier Pressure – Under Limit	Stabilizer pressure has dropped below 20bar.	-Check accumulator charge pressure -Check PTO pressure (if PTO powered) -Check system for oil leaks

10502.0.20	PHC Stablizier Pressure – Over Limit	Stabilizer pressure is higher than: set point + 30bar running from PTO or set point + 15bar running from AC motor	-Check PTO pressure setting -Check accumulator charge pressure
10502.0.26	PHC Stablizier Pressure – VALUE MAX	Stabilizer pressure reached sensor max value.	-Check that correct sensor is fitted -Check that sensor range parameter 1010 match the sensor -Check PTO pressure setting
10502.0.200	PHC Stablizier Pressure – Time out	Stabilizer pressure has not reached 50% of set point parameter 1003 after 30sec.	-Check pump feed shutoff valve. -Check PTO pressure (if PTO powered) -Check system for oil leaks
10503.0.13	PHC System Pressure – Open Circuit	System pressure sensor open circuit	-Sensor not connected or wire break. -Verify system pressure, parameter 0104
10503.0.16	PHC System Pressure – Short Circuit	System pressure sensor short circuit	-Wires shorted or sensor defective, check wiring/sensor -Replace sensor
10504.0.13	PHC AI 1 – Open Circuit	Analog Input 1 (4-20mA) sensor open circuit	-Sensor not connected or wire break.
10504.0.16	PHC AI 1 – Short Circuit	Analog Input 1 (4-20mA) sensor short circuit	-Wires shorted or sensor defective, check wiring/sensor -Replace sensor
10505.0.13	PHC AI 2 – Open Circuit	Analog Input 2 (4-20mA) sensor open circuit	-Sensor not connected or wire break.
10505.0.16	PHC AI 2 – Short Circuit	Analog Input 2 (4-20mA) sensor short circuit	-Wires shorted or sensor defective, check wiring/sensor -Replace sensor

10508.0.13	PHC DOUT AC PUMP UNLOAD – Open Circuit	AC Pump Unload valve open circuit	-Check for open circuit, power consumption < 5.0 Watt -System incorrectly configured with stabilizer, parameter 1001
10508.0.51	PHC DOUT AC PUMP UNLOAD – Current High	AC Pump Unload valve current higher than 4.0A	-Check wires and connections for short circuit
10509.0.13	PHC DOUT ACCUMULATOR DUMP – Open Circuit	Accumulator Dump valve open circuit	-Check for open circuit, power < 5.0 Watt -System incorrectly configured with stabilizer, parameter 1001
10509.0.51	PHC DOUT ACCUMULATOR DUMP – Current High	Accumulator Dump valve current higher than 4.0A	-Check wires and connections for short circuit
10510.0.13	PHC DOUT STABILIZER – Open Circuit	Stabilizer valve open circuit	-Check for open circuit, power consumption < 5.0 Watt -System incorrectly configured with stabilizer, parameter 1001
10510.0.51	PHC DOUT STABILIZER – Current High	Stabilizer valve current higher than 4.0A	-Check wires and connections for short circuit
10511.0.13	PHC DOUT COOLING PUMP HYDRAULIC – Open Circuit	Hydraulic Cooling Pump valve open circuit	-Check for open circuit, power consumption < 5.0 Watt -Wrong cooling pump configured, parameter 0301
10511.0.51	PHC DOUT COOLING PUMP HYDRAULIC – Current High	Hydraulic Cooling Pump valve current higher than 4.0A	-Check wires and connections for short circuit
10512.0.13	PHC DOUT LS DUMP – Open Circuit	LS-Dump valve open circuit	-Check for open circuit, power consumption < 5.0 Watt -System wrong configured with thrusters, parameter 2001 or 2101
10512.0.51	PHC DOUT LS DUMP – Current High	LS-Dump valve current higher than 4.0A	-Check wires and connections for short circuit
10513.0.51	PHC DOUT PUMP #2 – Current High	Pump #2 valve current higher than 4.0A	-Check wires and connections for short circuit
10514.0.13	PHC DOUT 5 – Open Circuit	Digital Output 5 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0505

10514.0.51	PHC DOUT 5 – Current High	Digital Output 5 current higher than 4.0A	-Check wires and connections for short circuit
10515.0.13	PHC DOUT 6 – Open Circuit	Digital Output 6 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0506
10515.0.51	PHC DOUT 6 – Current High	Digital Output 6 current higher than 4.0A	-Check wires and connections for short circuit
10516.0.13	PHC DOUT 3 – Open Circuit	Digital Output 3 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0503
10516.0.51	PHC DOUT 3 – Current High	Digital Output 3 current higher than 4.0A	-Check wires and connections for short circuit
10517.0.13	PHC DOUT 2 – Open Circuit	Digital Output 2 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0502
10517.0.51	PHC DOUT 2 – Current High	Digital Output 2 current higher than 4.0A	-Check wires and connections for short circuit
10518.0.13	PHC DOUT 1 – Open Circuit	Digital Output 1 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0501
10518.0.51	PHC DOUT 1 – Current High	Digital Output 1 current higher than 4.0A	-Check wires and connections for short circuit
10519.0.13	PHC DOUT 4 – Open Circuit	Digital Output 4 is configured as crossover and output is open circuit	-Check for open circuit, power consumption < 5.0 Watt -Output configured wrong, parameter 0504
10519.0.51	PHC DOUT 4 – Current High	Digital Output 4 current higher than 4.0A	-Check wires and connections for short circuit
10520.0.51	PHC DOUT COOLING ELECTRIC POWER – Current High	ECI cooling pump power current higher than 8.0A	-Check pump cable for damage and short circuits -Replace cooling pump
10521.0.51	PHC Bow Thruster Power – Current High	Bow thruster PVG feed current higher than 3.0A	-Check PVG wires and connections for short circuit
10522.0.51	PHC Stern Thruster Power – Current High	Stern thruster PVG feed current higher than 3.0A	-Check PVG wires and connections for short circuit

10523.0.51	PHC Thruster Power – Current High	Bow or Stern PVG feed current higher than 3.3A	Check all bow and stern PVG signal wires for short circuits
10524.0.51	PHC ECI Cooling Pump – Current High	ECI cooling pump current higher than 13.0A	-Check ECI cooling pump cable for damage and short circuits -Replace ECI cooling pump
10524.0.53	PHC ECI Cooling Pump – Overvoltage	ECI cooling pump overvoltage, voltage higher than 33.0V	-Check PHC-3 input voltage is below 33.0V -Replace ECI cooling pump
10524.0.54	PHC ECI Cooling Pump – Undervoltage	ECI cooling pump under voltage, voltage is lower than 18.0V	-Check PHC-3 input voltage is higher than 18.0V -Replace ECI cooling pump
10524.0.55	PHC ECI Cooling Pump – Overtemp	ECI cooling pump temperature higher than 100°C (212°F)	-Check ECI cooling pump for damages -Replace ECI cooling pump
10524.0.100	PHC ECI Cooling Pump – No Communication	No communication with ECI cooling pump	-Check if ECI pump is connected -Check wires to ECI pump for open circuits -Wrong cooling pump configured, parameter 0301
10524.0.205	PHC ECI Cooling Pump – HW FAULT	ECI cooling pump hardware fault	-Replace ECI cooling pump
10526.0.0	PHC ECI Cooling Pump Blocked – –	ECI cooling pump is blocked	-Reset fault and if fault reappears, cooling pump need service or replacement. -Check pump inlet for obstacles
10527.1.0	PHC VFD Not Ready Instance 1 –	VFD not ready	-VFD external run enable/power available signal is lost.
10528.1.10	PHC VFD ABB Parameter Instance 1 Level Low	ABB ACS550 parameter values 2001 or 2002 cannot be a negative value.	-Check ABB ACS550 parameter 2001 and 2002.
10529.0.19	PHC ECI Cooling Pump Speed – Under Limit	ECI pump motor speed under limit, below 100rpm	-Check hose for dirt -Check pump inlet for obstacles

36000.1.24	ABB ACS550 Instance 1 Fault	ABB ACS550 fault	Se ABB ACS550 drive for more details
36002.1.24	VACON Instance 1 Fault	VACON VFD Fault	Se VACON drive for more detail s
36100.1.100	VFD Instance 1 No Communication	Lost communication with VFD	-VFD not powered up -VFD communication cable not connected or incorrectly wired
36103.1.0	VFD IN LOCAL Instance 1 –	VFD in local mode	-Switch VFD to remote mode

Service and Maintenance

FIN ACTUATOR UNITS
The stabilizer system is in general a low-maintenance product, but as all moving parts some degree of preventive maintenance will increase the lifetime and reliability of the system.
A chart for recommended check and service points is thereby offered at the end of this section.
For all new installations, or after a major parts change, a basic check should be done after the first 100 hours of operation or after the first week of proper use:

- Check that all hydraulic fittings are tight.
- Check all hoses for chaffing, and ensure they are not in contact with any moving parts.
- Inspect hydraulic cylinder rods and gland seals for damage, leaking, or scratches.
- Inspect the dirt indicator on the return oil filter.
- “Shake” the fins from the outside to feel if there is any play in any connection.
- Open the fins manual decouple valve (at the acuator point ot allow movement) and manually move the fin fully to both sides to feel that there is not specific tough spot in the bearings.

Every time the boat is out of the water for service or other reason, we recommend that you take this opportunity to more thorougly check some points that is not possible when the boat is in the water. A proper cleaning and check of the fins anodes (if fitted, can also be bonded to boats large anode system) is also appropriate during a haul out.

- Axial and radial play in the shaft can also be checked at this time; see the table below that details play allowances. A dial indicator is recommended for this procedure.
    - Radial play should be checked with the indicator/micrometer positioned just below the seal housing between the top of the fin and the underside of the hull.
    - Axial play should be checked by measuring the relative distance between the top of the axle shaft and hull plate. By using a crow bar on the twin yoke, moving and feeling the tighteness of the bearings inside the boat while measur ing from a fixed point with a micrometer.

Shaft Radial Play (mm) Maximum		Shaft Axial Play (mm) Maximum
SPS 65/66/67	0.10	0.20
SPS 55/90/91/92/93/94	0.15	0.30

NOTE!

Because of the big variation in different vessels actual use and operation, system specifications and maintenance, it is not possible to accurately predict the anticipated service life of the main shaft bearings. Thereby, Sleipner recommends that the bearing clearances be checked periodically when possible so to avoid extra halout between normal service need.
The service timing indicated in the chart is based calculations and experience, but please note that because of the variations in use and load, both due to different operation and for example different fin sizes allowed on the same actuator size, the life of bearings and seals can be both longer and shorter than indicated by the maintenance chart.

FINS
It is recommended that a thorough inspection of the fins be performed when the vessel is lifted out of water for maintenance. Dam-ages on the fin surface must be repaired with vinylester/epoxy done by professionals

HYDRAULICS
The pressure filters require periodic element changes as per the maintenance schedule. The valves and manifolds are to be inspected regularly for external damage. To avoid corrosion and deterioration, a water inhibitor such as WD-40 or similar should be applied to the valves and fittings immediately after wash-down of the equipment.

Filter replacement:
We recommend to replace pressure and return line filter elements after the initial start up and test period, and latest at 50 operating hours. Thereafter every 2000 operating hours or every 2nd year.
Both pressure filter and return filter have pressure drop indicators. Check indicators every 6th month. The check have to be done with oil temperature above 40˚C, and the most flow demanding consumer active. Filter element replacement are required if indica-tors are in the red area.

Hydraulic oil replacement:
Every 4000 operating hours or every 3rd year. For heavy duty applications and commercial use, we recommend oil sample analyses every year.
Check oil color every 6th month. White or grey oil indicates water ingress or heavy condensation. This will require filter replace-ment, oil replacement and flushing of the system. See schedule and Hydraulic system manual.

CONTROL SYSTEM
With the exception of keeping the electrical parts and wiring clean, dry and damage-free, no maintenance is required for these parts. In general, all electrical equipment should be periodically checked to ensure that there are no mechanical damage or water build-up.

POWER UNIT

- The power unit and its associated components require maintenance and have a lifetime so will in the future require replacement which can be done preventively as indicated within the charts here, to avoid potential follow damage to other parts.
- The hydraulic oil integrity must be checked as per the schedule by extracting a sample from the system for

analyzis to ensure it is with-ing the standards of its spesifications.
- The hydraulic power unit motor should not stay unused for longer periods, and either manually rotated every 3 months or started to ensure proper lubrication of the shafts and bearings on its shaft and bearings.

PREVENTATIVE MAINTENANCE SCHEDULE

- The maintenance schedules in this section indicate the recommended preventative maintenance intervals for equipment supplied by Side-Power. Components utilized in Side-Power Stabilizer Systems but not supplied by Side-Power are not included in the maintenance schedule or under any Side-Power warranty.
- The maintenance intervals are listed in hours of operation and time where relevant. Maintenance is to be performed according to this schedule utilizing time or hour intervals, whichever comes first. . The maintenance schedule incorporates the minimum required main-tenance to ensure correct operation of the system. Should these guidelines not be followed, the warranty for those items will be void.
- To perform maintenance, replacement parts may need to be purchased. Refer to the recommended spares list and/or drawings for associated part numbers.

Contact a Authorized Side-Power technician.

- If analysis of the scheduled oil sample indicates an elevated level of brass particles in the hydraulic system, the pumps should be replaced or overhauled as soon as possible. Delay in component removal and system flushing will lead to contamination problems throughout the hydraulic system. Erratic component operation may be a symptom of hydraulic fluid contamination.
- 2000 operating hours or annually, whichever occurs first.
- Fins should be inspected annually by diver if possible
- The data in the table below is provided to assist the vessel in scheduling the appropriate service staff and coordination of vessel docking (haul out) for maintenance procedures.

Level	Description
1	Onboard maintenance possible at sea No shore support required
2	Shore supported maintenance and corrective measures
3	Trained personnel required – Side-Power personnel or equivalent
D	Dry – Vessel must be out of water to perform task
W	Wet – Vessel can be in water to perform task

HULL UNIT

Maintenance schedule		Service level	250 h	500 h	2000 h	4000 h	8000 h	12000 h	When out of water	When required	Months/ Year
1. Change oil in bearing assembly (		**1 D**				ü					36/3rd
2. Inspect spherical bearings, and Main Cylinders for external leakage		**1 W**			ü						
3. Inspect Stabilizer Manifolds		**1 W**			ü						
4. Inspect Stabilizer Manifolds Electrical Connections		**1 W**			ü						
5. Inspect Fin Angle Sensor Belts		**1 W**			ü						
6. Inspect Twin Yoke Area		**1 W**			ü						
7. Inspect Hydraulic Hoses		**1 W**			ü						
8. Check Shaft Clearances	(	**3 D**							ü		
9. Replace Lower Shaft Seals (		**3 D**								ü	
10. Replace Main Shaft Bearings (		**3 D**								ü	
11. Inspect and replace Spherical Bear- ings and Cylinder Pins if necessary. (NOT relevant for SPS55)(		**2 W**				ü				ü	
12. Rebuild/Replace Cylinders (		**3 W**				ü				ü	
13.Replace the Fin Angle Belt		**1 W**				ü				ü	
14. Replace hydraulic actuator hoses		**3 W**				ü				ü	36/3rd

FINS

Maintenance schedule	Service level	250 h	500 h	2000 h	4000h	8000 h	12000 h	When out of water	When required
1. Inspect Fin Surfaces	**1 D ******			ü ********				ü	

HYDRAULIC POWER UNIT

Maintenance schedule	Ser-vice level	250 h	500 h	2000 h	4000 h	8000 h	12000 h	When out of water	When requir ed	Month s/ Yea r
1. Inspect the Dirt Indicator of the r eturn filter, replace when required	**1 W**		ü							6/0.5
2. Inspect Flexible Hoses	**1 W**		ü							
3. Inspect Suction Hoses	**1 W**		ü							
4. Inspect Electrical Connections	**1 W**			ü						
5. Inspect Cooling Pump	**1 W**		ü							
6. Inspect Oil Cooler Tubes	**1 W**						ü			
7. Inspect Pump Drive Coupling	**1 W**				ü					
8. Inspect Motor and Frame Mount s	**1 W**			ü						
9. Test Hydraulic Oil Quality by me ans of taking sample***	**2 W**			ü					ü	12/1st
10. Replace Return Filter Element*	**1 W**			ü					ü	24/2n d
11. Replace Pressure Filter Eleme nt*	**1 W**			ü					ü	24/2n d
12. Change Oil. Refill with mineral based hydraulic oil ISO – VG46	**1 W**				ü				ü	36/3rd
13. Replace Drive Coupling Eleme nt	**3 W**					ü				
14. Rebuild/Replace Cooling Pum p	**3 W**								ü	
15. Replace Hydraulic Hoses	**3 W**								ü	
16. Replace Oil Cooler	**3 W**								ü	
17. Replace Hydraulic Pumps*	**3 W**								ü	

CONTROL SYSTEM

Maintenance schedule	Service level	250 h	500 h	2000 h	4000 h	8000 h	12000 h	When out of water	When required
1. Clean the Cooling Fan of the VFD	**1/3 W**			ü					
2. Test the Emergency Stop Button	**1/3 W**				ü				

Technical Specifications

Stabilizer Panel: TP-43A	
Input voltage	8-31VDC
Power consumption	<3.5W
Operating temperature	-10 to 70 degrees C
Storage temperature	-30 to 80 degrees C
IP rating front	IP67
IP rating rear	IP66
Humidity	max 95% RH
Weight	310g

Measurements

PANEL:	Top
L (mm)	165
W(mm)	55
H (mm)	103

Warranty Statement

1. The equipment manufactured by Sleipner Motor AS (The “Warrantor”) is warranted to be free from defects in workmanship and materials under normal use and service.
2. This Warranty is in effect for of two years (Leisure Use) or one year (Commercial use) from the date of purchase by the user. Proof of purchase must be included, to establish that it is inside the warranty period.
3. This Warranty is transferable and covers the product for the specified time period.
4. In case any part of the equipment proves to be defective, other than those parts excluded in paragraph 5 below, the owner should do the following:
    1. Prepare a detailed written statement of the nature and circumstances of the defect, to the best of the Owner’s knowledge, including the date of purchase, the place of purchase, the name and address of the installer, and the Purchaser’s name, address and telephone number;
    2. The Owner should return the defective part or unit along with the statement referenced in the preceding paragraph to the warrantor,
       Sleipner Motor AS or an authorized Service Centre, postage/shipping prepaid and at the expense of the Purchaser;
    3. If upon the Warrantor’s or Authorized Service Centre’s examination, the defect is determined to result from defective material or workmanship, the equipment will be repaired or replaced at the Warrantor’s option without charge, and returned to the Purchaser at the Warrantor’s expense;
       (d) no refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Prior to refund of the purchase price, Purchaser must submit a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains;
       (e) warranty service shall be performed only by the Warrantor, or an authorized Service Centre, and any attempt to remedy the defect by anyone else shall render this warranty void.
5. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. No other express warranty is hereby given and there are no warranties which extend beyond those described in section 4 above. This Warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, and any other obligations on the part of the Warrantor or its employees and representatives.
7. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any person or persons, or damage to property, loss of income or profit, or any other consequential or resulting damage or cost which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment, or part thereof.
8. The Warrantor assumes no liability for incidental or consequential damages of any kind including damages arising from collision with other vessels
   or objects.
9. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

DECLARATION OF CONFORMITY

Sleipner Motor AS P.O. Box 519, Arne Svendsensgt. 6-8 N-1612 Fredrikstad, Norway
Declare that the following (Stabilizer) products:

SPS55B	Side-Power Stabilizer System	Actuator kit
SPS66B	Side-Power Stabilizer System	Actuator kit
SPS67B	Side-Power Stabilizer System	Actuator kit
SPS92B	Side-Power Stabilizer System	Actuator kit
SPS93B	Side-Power Stabilizer System	Actuator kit
SPS94B	Side-Power Stabilizer System	Actuator kit
SPS97B	Side-Power Stabilizer System	Actuator kit
VF600	Side-Power Stabilizer System	Vector Fin kit
VF850	Side-Power Stabilizer System	Vector Fin kit
VF1050	Side-Power Stabilizer System	Vector Fin kit
VF1350	Side-Power Stabilizer System	Vector Fin kit
VF1650	Side-Power Stabilizer System	Vector Fin kit
VF1950	Side-Power Stabilizer System	Vector Fin kit

SCU	Side-Power Stabilizer Control System	Stabilizer Control Unit
FCU	Side-Power Stabilizer Control System	Fin Control Unit
TP-43 Panel	Side-Power Stabilizer Control System	Stabilizer Main operating panel
PHC-3	Side-Power Stabilizer Control System	Hydraulic system control unit
GW-1	Side-Power Control System	Gateway unit

Has been designed and manufactured in accordance to the following technical regulations:
DIRECTIVE 2013/53/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 November 2013 on recreational craft and personal watercraft.
DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility.
DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
Fredrikstad, 19th of January 2018
Signature
Arne K Skauen
Managing Director, Sleipner Motor AS
www.side-power.com
SLEIPNER MOTOR AS P.O. Box 519 N-1612 Fredrikstad Norway
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differences between product and document.

Documents / Resources

	SIDE-POWER 5288 Stabilizer Systems [pdf] User Guide 5288, 5288 Stabilizer Systems, Stabilizer Systems, Systems

References

- Sleipner - Ocean born. Tech bred.
- User Manual

Manuals+, Privacy Policy