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Installation
Operation and
AUTOPILOT
STERNDRIVE

ST5000

Autohelm
Introduction


Specifications


2
Basic Operation

Safety

For T5000 Stabilizer, Always Operation and Installation Handbook
Chapter 1: Operation

1.1 Basic Principles

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1

1. Operation

Off Course Alarm

Automatic Deadband Control (Auto Steadier)

Track Control

Dodge

Course Changes (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

Auto

Standby

Standby

1.2 Operator Controls

1.1 Basic Principles
Chapter 1: Operation

ST5000 Sensor/Anthony Operational and Installation Handbook
The value set in calibration hero.

If the vessel current heading differs from the locked heading by more than 20 seconds, the alarm will sound for 1 second. Then:

**ON Course Alarm**

This can only be done with the autopilot in Standby mode.

Press the +1 and -1 degree keys together for 1 second to display.

If the vessel heading is very close to the reference heading, a nudger reference turns.

**Nudger Angle Display**

All from these units.

If the ST5000 displays the information on the ST5000 can be switched on or off. Also, other ECDIS instruments or autopilot control units are connected.

Press the +1 and -1 degree keys together to toggle the display on and off.

** Illumination**

Illumination for the control head display can be switched on for night time.

Illumination for the control head display can be switched on for night time.
Advanced Operation

Chapter 2: Using Track Control

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ST5000 Set up Manual Operation and Installation Handbook

16
Cross Track Error

Press the +10 and -10 degree keys together.

Display
The information in the display will be continuously updated on the

The display will show the new course and the remaining

Check that all is set to line up the new course.

ST5000 Stabilized Auto Pilot Operation and Installation Handbook

Chapter 2: Using Track Control

2.1 Operation in Track Control

Track Control shows the ST5000 to maintain a lock between two way points.
Waypoint Advance

The Waypoint Advance function allows the user to set a target speed and the MPA will adjust the throttle accordingly. This is useful for maintaining a constant speed during navigation or for reaching a specific speed quickly.

To set a target speed, the user must enter the desired speed into the MPA and press the Waypoint Advance button. The MPA will then display the current speed and the target speed, and adjust the throttle to maintain the target speed as closely as possible.

Limitations

The Waypoint Advance function is not available for all types of MPA models. It is recommended that the user consult their MPA manual for information on whether or not the Waypoint Advance function is compatible with their specific model.

Chapter 2: Using Track Control

Track Control allows the user to set a target speed and maintain it by adjusting the throttle. This is useful for maintaining a constant speed during navigation or for reaching a specific speed quickly.

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Limitations

The Track Control function is not available for all types of MPA models. It is recommended that the user consult their MPA manual for information on whether or not the Track Control function is compatible with their specific model.
Chapter 3: Adjusting autopilot performance

3.1 Setting up Rudders Gain

To achieve a smooth and precise navigation, it's essential to correctly set the rudder gain. The correct setting ensures the autopilot operates efficiently without overreacting. Here are the steps to adjust the rudder gain:

1. **Set the rudder gain to a lower setting** (refer to the autopilot's manual for specific values). This is typically done when the vessel is in a calm environment or when making small course changes.
2. **Gradually increase the rudder gain** until the autopilot is actively engaged. Observe the vessel's response to these adjustments.
3. **Fine-tune the rudder gain** to achieve the best balance between responsiveness and smoothness.

Remember, the goal is to minimize unnecessary rudder movement while maintaining precise and responsive steering. This balance is crucial for safe and efficient navigation.

Additional Tips:
- **Monitor** the vessel's behavior under different conditions to adjust the rudder gain accordingly.
- **Practice** in calm waters before applying these settings in more challenging environments.

By following these steps, you can optimize your vessel's autopilot for optimal performance and safety at sea.
WARNING:
- Decrease gain by 1 or 2 levels.
- Increase gain by 1 or 2 levels.
- Decrease gain by 1 or 2 levels.
- Increase gain by 1 or 2 levels.

Determine if the manual signal to displacement should be cancelled.

Procedure:
1. Stop the engine.
2. Set the displacement to zero.
3. Set the speed to zero.
4. Start the engine.
5. Check the displacement.

Due to the significant differences in dynamic stability between planning and

3.2 Gain adjustment (Typically/Soptunity Heading or compensation)

3.3 Automatic auto-pilot gain adjustment

Receivers often do not have good course keeping.

Note that, unlike a rudder reference transducer, the gain in the head-up display is not a direct measurement of rudder angle.

A rudder reference transducer can be used as an instatiation to provide:

3.4 Adding a Rudder Reference Transducer
Chapter 4: Autopilot re-calibration

The ST5000 can be adjusted to meet the characteristics of your vessel and steering system.

The calibration routine allows the following parameters to be adjusted from their factory default settings:

- Rudder gain (Value on power up)
- Rudder offset adjustment
- Rudder limit
- Rate of turn limit
- Off course alarm limit
- Automatic Trim adjustment delay
- Northerly/Southerly turning error compensation

The autopilot also requires certain other information:

- Average cruise speed
- Local variation

This section will look at each feature in turn and explain how to fine tune it to suit your particular boat.

4.1 Entering Calibration mode

- Press the Standby button for 5 seconds until the display shows:

![Display showing CAL and OFF]

The number on the left identifies the feature (see table in section 4.3) and the number on the right the selected value for that feature.

Each feature can be cycled through using the Auto key.

The existing values can be viewed at any time without alteration, a simple momentary push of the Standby key will return the pilot to its normal operating mode without affecting the previous settings.

4.2 Exiting calibration mode

You can exit calibration at any time in one of two ways:

- Press Standby for 1 second
  This will enter any adjusted values into memory.

- Momentarily press Standby
  This will exit calibration without entering any adjusted values into memory.

4.3 Suggested initial calibration settings

Listed below are suggested calibration settings for planing vessels. These will provide safe performance for the initial sea trial.

If you change any of the settings you can record them in the 'Adjusted Values' column for future reference.
transducer.

If any features setting of your transducer includes a meter reference
please refer to your transducer manual for more information.

Note: If level 10 is set to 0 then level 11 will be enabled.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Setting 1</th>
<th>Setting 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluke</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Release</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Steerline</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Meter</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Outlet</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Fluke/Outlet</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Vacuum/mag</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Depth</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Speed</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Range</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Gain</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Buffer</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mode</td>
<td>1</td>
<td>0</td>
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<tr>
<td>System Type</td>
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<td>0</td>
</tr>
<tr>
<td>Trim</td>
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<td>0</td>
</tr>
<tr>
<td>Course</td>
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<td>0</td>
</tr>
<tr>
<td>Bearing</td>
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<td>0</td>
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<tr>
<td>Tack</td>
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<td>Heading</td>
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<td>0</td>
</tr>
<tr>
<td>Heading</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Chapter 4: Adjustment and Calibration

4.4 Calibration: Use autopilot to suit your boat.
Chapter 4: Adjustment to Calibration

Press the 2nd key to display the calibration level adjustment.

Enter calibration level 1 by pressing the Standby key for 5 seconds.

The encoder values should be set to the values of the two recorded angles as shown.

Enter calibration by pressing the Standby key for 5 seconds until the display.

Note: Any momentary push of the same display but will not store the value.

To set up the encoder, it is not necessary to perform calibration and record.
Chapter 4: Angular-rate calibration

ST5000 Scanner Auxiliary Operation and Installation Handbook
Positons without heading.

Chapter 4. Auxiliary to Calibration

1. Press the +1 and -1 Degree keys and return to the latest level.
2. Press the Auto menu button.

Press the +10 Degree course change key once.

Proceed to the Calibration setup.

A momentary push will display the display will display the current level.

[Diagram showing current level 13]

Press the Auto menu button.

Reference transducer and the time unit hours when you go to position

Level 13 only requires setting up the suspension wherever a level.

Calibration level 13 (header damping)

Use the +1 and -1 Degree keys.

L = (Emergency Steering Release enabled, Adjust the release function)

E = (Emergency Steering Release disabled)

Press the Auto menu button.

Level 12 enables or disables the emergency steering release function.

Calibration level 12 (Emergency Steering Release)

Press the +1 and -1 Degree keys to return to the previous level.

Set up heading using the +1 and -1 Degree keys.

Press the Auto menu button.

Deflection of heading by automatic adjustment can be seen in the diagram.
has been switched off.

If required this page can be removed from the handbook after access
until the control head returns to normal operation

1. Store the setting by pressing the -1 and standby keys for 10 seconds

2. Take the calibration access and off using the +1 and -1 degree.

3. Show:

- Press and hold the -1 and standby keys for 10 seconds until the display
access.

It is possible to disable the calibration setup to prevent unauthorised

4.5 Disabled calibration access

The calibration should now be saved by pressing the standby key for

1 second.

More: it is most important that the buffer damping levels set so low as

ST9000 Installation, Adjustment, Operation and Installation Handbook
Faulty electrical operation

As depicted in the diagram, this will be an intermittent connection and
connector is secured over the blade and not under the connector and
connector can be re-used. When installing each spade connector make sure the
All electrical connections to the ST500 are made via spade connectors.

Cable connections

Power supply connection

Chapter 5: Installation

ST5000 Standalone Adaptive Operation and Installation Handbook
5.2. Fluxgate Compass

**Mounting Position**

The fluxgate compass should be attached to a conventional vessel's superstructure at the leading edge and at the leading deadwood. Use the sea fitting screws provided. There is no need to counter the sea fitting screws.

**Masts**

Install the lead of the power lead supplied with the unit as shown. Any sea fitting screws should be provided with the unit for installation.

---

**Connection to the Seatalk Bus**

The Seatalk is supplied with one Seatalk cable lead. This can be connected to the Seatalk bus.

---

**Important**

Correct cable size is critical for correct analogical operation.
Cabling

To ensure the labels are free from any obstructions a labeler should be used to apply labels to the cable run. The labels should be applied to the cable run at close intervals to ensure that the cables can be traced and identified.

Connection at the rear of the control head as shown below:

Control dimensions

Chapter 5: Installation

ST2000 Steerline SteerPlus Operation and Installation Handbook
Installation - Vavo (Post Type B72215)

1. Remove the brake support bracket from the steering column. Ensure that the steering column and the brake support bracket are properly aligned.
2. Install the adapter bracket into the steering column, aligning it with the slots in the adapter bracket.
3. Secure the adapter bracket with the screws provided.
4. Reconnect the electrical connections and ensure all hoses and wiring are properly routed and secured.

Note: Follow the provided instructions carefully to ensure proper installation and functionality.

5.4 Steerable Actuator Installation

ST5000 Steerable Actuator Operation and Installation Handbook

Page 52
Chapte 5: Installation

Installation - Mercruiser/OMC Yamaha

Secure the nut and washer and replace it with the rubber support bracket as shown and replace it with the rubber support bracket as shown.

Follow the procedure outlined in the installation guide to install the propeller and adapter bracket.

Secure the nut and washer and replace it with the rubber support bracket as shown.

Follow the procedure outlined in the installation guide to install the propeller and adapter bracket.
Chapter 5: Installation

Mounting in a Restricted Area

The body can be filled with a bladder to the mounting bracket as follows:

If an obstruction prevents installation of the valve unit as supplied, the main valve body can be filled with a bladder to the mounting bracket as follows:

1. Remove the screws and gently slide the cover forwards.
2. Ensure the rubber covers do not pull from the pipe or the cover.
3. Slide the cover back until the fastening wheel is nose to nose with the nut.
4. Tighten the lock nut securely and make sure that the lock unit is no longer than the lock nut.
5. Slacken off the lock nut and rotate the main body as required.
6. Run the outer cable back up the pipe and then into the pipe inside the cover.

Cable Connection

Once again slide the steering wheel to move the needle from hand over hand until movement.

Then pull the cable out with sufficient force to remove the valve body. Secure the cable to the stem.

Connect the cable to the valve by turning the thimble clockwise.

Plug in the cable supplied with the valve unit making sure that the plug.

Replace the cover taking care not to squeeze any cables.

Once again slide the steering wheel to move the needle from hand over hand until movement.
### NMEA 0183 Data Transmission to Other Equipment

The ST5000 will accept NMEA data in the NMEA 0183 format as shown in [Figure 6.3](#).

#### 1. Cabling

Track Cabling mode. The required cables are shown in [Figure 6.3](#).

#### 2. NMEA Data Transmission to Other Equipment

- **Interface (0153)** should be installed as shown.

#### 6.3 Formats

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Position Transfer</td>
</tr>
</tbody>
</table>
Chapter 7: Functional Test and Initial Sea Trial

ST5000 Standardized Operational Operation and Installation Handbook
Section 4.3

To provide safe, stable, and smooth control for the majority of vessels, the ST5000 control panel includes a display and control system that allows for easy and intuitive operation. The ST5000 is designed to be a reliable and user-friendly system that can be easily integrated into any vessel. A detailed user manual is included to provide comprehensive guidance on installation and operation. The ST5000 is designed to be a robust system that can handle a variety of conditions and environments.

Chapter 7: Functional Test and Initial Set-Up

Initial Sea Trial

1. Set the control panel to the ST5000 control head and the instruments.
2. Turn on the ST5000 and check that the display shows the correct information.
3. Test the control panel to ensure that it is functioning correctly.
4. Test the instruments to ensure that they are functioning correctly.
5. Check that the system is ready for use.

ST5000 Installation, Operation, and Maintenance Handbook
Manual operation:

- Press and Hold Standby for 1 second

- Select compass correction as follows:
  - If compass is oriented correctly, press and Hold Standby for 1 second

- To set compass heading, select the compass correction function

- Displayed heading will appear in the steering compass of a known
  direction. The compass change keys (+ and -) to increase or decrease the
  desired heading

When the amount of deviation exceeds 1.5°, use recommended the

| 10° south |
| 180° north |

- Do not attempt to make any permanent change to the recommended
  calibration

- Before calibrating, the compass face should be oriented to the recommended
  heading

ST5000 Steering and Navigation Installations Handbook
Chapter 7 Furlong Functional Test and Final Sea Trial
Positions where analogical controls desired.

These controls units are available for permanent mounting at additional

Extension Seat matters are available in various finishes, these are in

Each of middle position

A further reference is added to provide a continuous


Header Reference Transducer (Z131)

Geometric (North) orientation and heading in various instructions are presented on the Sealtex block to

Assuming the correct orientation you to read NMEA 0183 NMEA 0183 data to a plotter or speed and

The NMEA interface will convert Seat units to NMEA 0183. This is

Chapter 8: Accessories

ST5000 Starsense Analogical Operation, Operation and Installation Handbook
### Chapter 10: Fault Finding

- **Fault**: The following checklist should help cure the problem.
  - **Action**: Review all components subject to wear and tear in the system, and repair or replace as necessary. All system controls are subject to a comprehensive test procedure.

### Chapter 9: Maintenance

Always quote the serial number, which is printed on the label on the back of the control head.

- **Action**: Check all control head connections and the control head's wiring. If any control head connections are tight and the control head is not functioning, please consult our technical support department to determine the problem and provide expert assistance.

- **Caution**: If a control head does not function properly, do not replace or service it until further notice.

- **Warning**: Discontinue use of any control head that has been damaged. Replace with our ST5000 model, or contact our technical support department for assistance.

- **Notice**: Always ensure the control head is clean and dry before use.

- **Drive Unit**: Always ensure the control head is clean and dry before use.

- **Check Display**: Always ensure the control head is clean and dry before use.

- **Fault**: Always ensure the control head is clean and dry before use.