



# Navis JP3000

JOYSTICK PILOT  
FOR MEGA-YACHTS

# Introduction

Enjoy safe docking and free maneuvering with Navis JP3000!

Navis JP3000 is a new innovative solution for mega-yachts which enables to make mooring, docking and maneuvering safe and more comfortable. Navis JP3000 has specially been designed for those ship owners who highly appreciate the safety of maneuvering and full control over the vessel motion irrespectively of weather conditions and the area available for maneuvering.



The up-to-date technologies combined with the latest achievements in the field of dynamic positioning make Navis JP3000 Joystick Pilot system an ideal solution for your vessel, allowing you to discover the full potential of your super-yacht and to enjoy its maneuverability.

Navis JP 3000 has been specifically designed for yacht and workboat applications when free maneuvering in the limited space is required and conforms to the requirements set for Dynamic Positioning Systems of the ABS DPS-0 and DNV-T classes. Navis Joystick Pilot 3000 is not intended for use on any DP (Dynamic Positioning) classed vessel as approved solution for dynamic positioning. A Range of NAVIS IVCS or NavDP4000 series/DPS product has to be considered in that case.



## JP3000 OPERATION MODES

### Autopilot control modes:

- **“AUTO”** control mode – Automatic Heading control
- **“TRACK”** control mode – JP controls vessel motion on straight legs (ECDIS or ECS can be used as an external track controller in this mode, TCS Category A)
- **“AutoNAV”** control mode – JP controls vessel motion on straight legs and turns by an external ECDIS (TCS Category C) or NAVIS “Survey System”
- **“Dodge”** control mode – Direct manual control of synchronized rudders, using the rotary knob on operator unit
- **“Override”** control mode - Direct manual control of synchronized rudders, using external override devices (tiller, jog lever) (Optionally)

### Joystick control modes:

- **“Joystick Manual”** control mode – This mode is used for fore-and-aft and traverse steering, vessel moment control using joystick manually
- **“Joystick Auto Heading”** control mode – This mode is used for fore-and-aft and traverse steering with automatic heading control
- **“Speed Control & Auto Heading”** control mode – This mode is used for fore-and-aft and traverse steering with

automatic heading control. Joystick is intended to set longitudinal and transverse speed. Knob is used to set a new heading value (preset heading)

- **“Hold Position”** control mode – This mode is used for automatic vessel positioning in the open sea, at dock maneuvering, drilling rigs, etc. **(OPTION)**
- **“Anchor Watch”** control mode – This mode allows keeping a vessel in the set radius from the coordinates, pre-established by the operator **(OPTION)**

## NAVIS JP3000 INTERFACES

### Main Engine and Thrusters interface:

- Proportional control via – 0...10 V,  $\pm 10V$  or 4...20mA control signal

### Steering Gear interfaces:

- Solenoid valves, 24V DC (up to 3A load current)
- Proportional valves – 0...10 V,  $\pm 10V$  or 4...20mA control signal
- Proportional rudder control (steering

gears with follow-up steering control system) – 0...10 V,  $\pm 10V$  or 4...20mA control signal

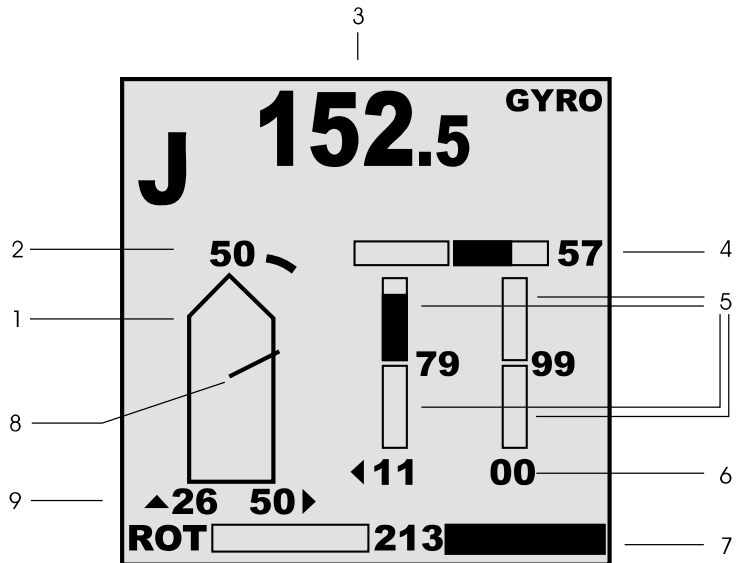
### Sensor interfaces (NMEA):

- Gyrocompass (recommended)
- Magnetic or fluxgate compass
- (D)GPS Receiver
- Log (water referenced)
- External ECS or ECDIS for Track Control



Navis JP3000 presents you with a useful set of information on its 5" high-resolution LCD display. A particular attention has been paid to offer simple and intuitive operation of the system.

All the information such as alarms, the heading set and the heading steered, the commanded and the actual rudder angle, the commanded and the actual thruster directions and magnitudes are clearly shown in easy-to-read pages.



## JOYSTICK MODE SCREEN

- |                                  |  |
|----------------------------------|--|
| 1. Yacht mnemonic diagram        | 6. Port and starboard rudder angles                      |
| 2. Rotation moment set           | 7. Rate of heading change                                |
| 3. Heading set                   | 8. Thrust vector set                                     |
| 4. Bow thruster mnemonic diagram | 9. Thrust vector constituents (longitudinal, transverse) |
| 5. Port and starboard propellers |  |

## NAVIS JP3000 STRUCTURAL ELEMENTS



**“Mode Switch Selector” is intended for switching-over between Autopilot and Joystick control modes.**

**“Steering Mode Selector” is intended for switching-over between NFU, FFU and Autopilot steering modes.**

**Also, the existing steering mode selector installed in the navigation bridge can be used.**

# Modes of operation – Autopilot control modes

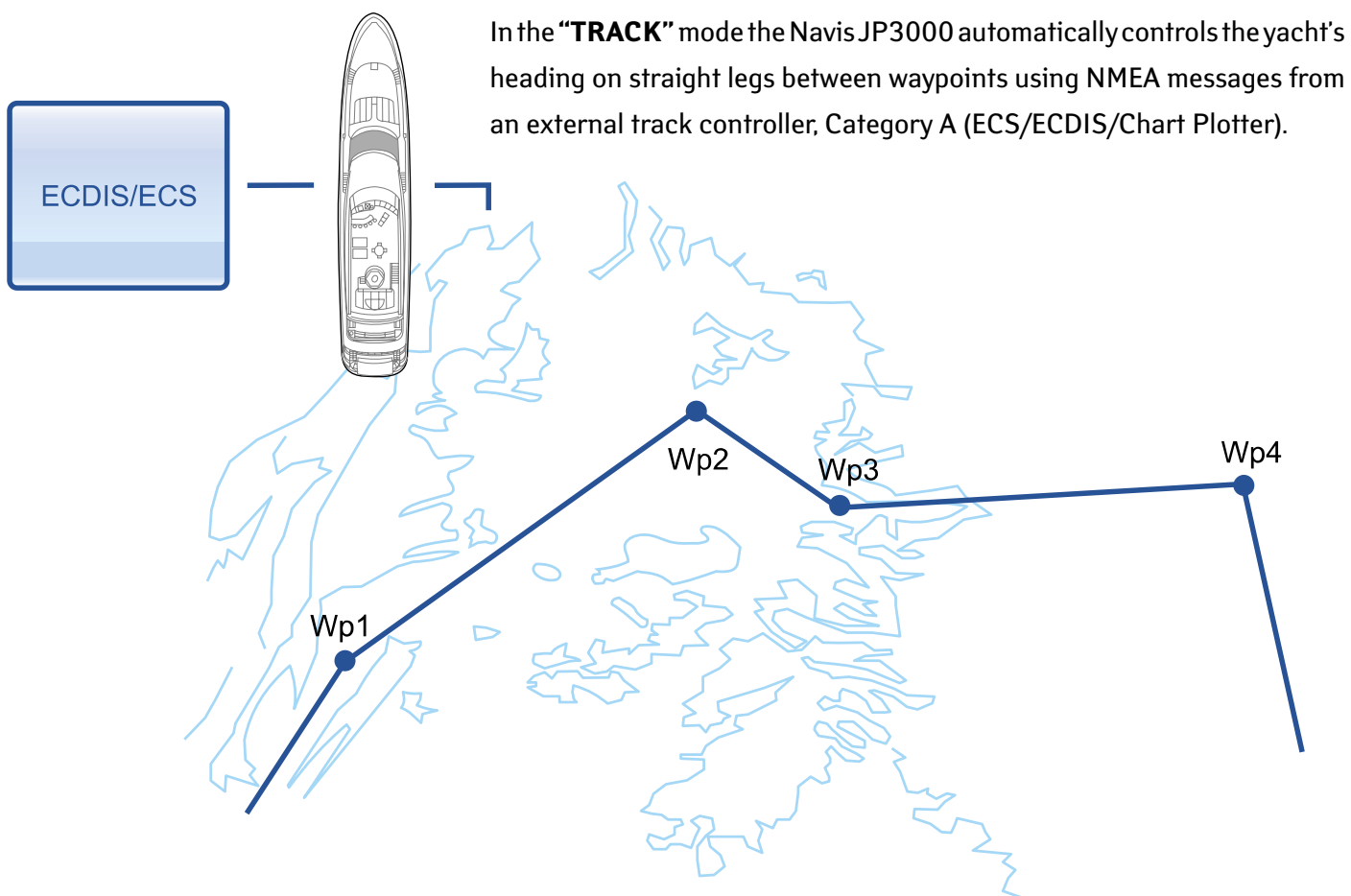


## AUTO

In the "AUTO" mode the yacht heading is controlled automatically by JP3000.



## TRACK



# Modes of operation – Autopilot control modes



## DODGE

In the “**DODGE**” mode the heading can be corrected manually using the rotary knob on JP3000 Control Panel.

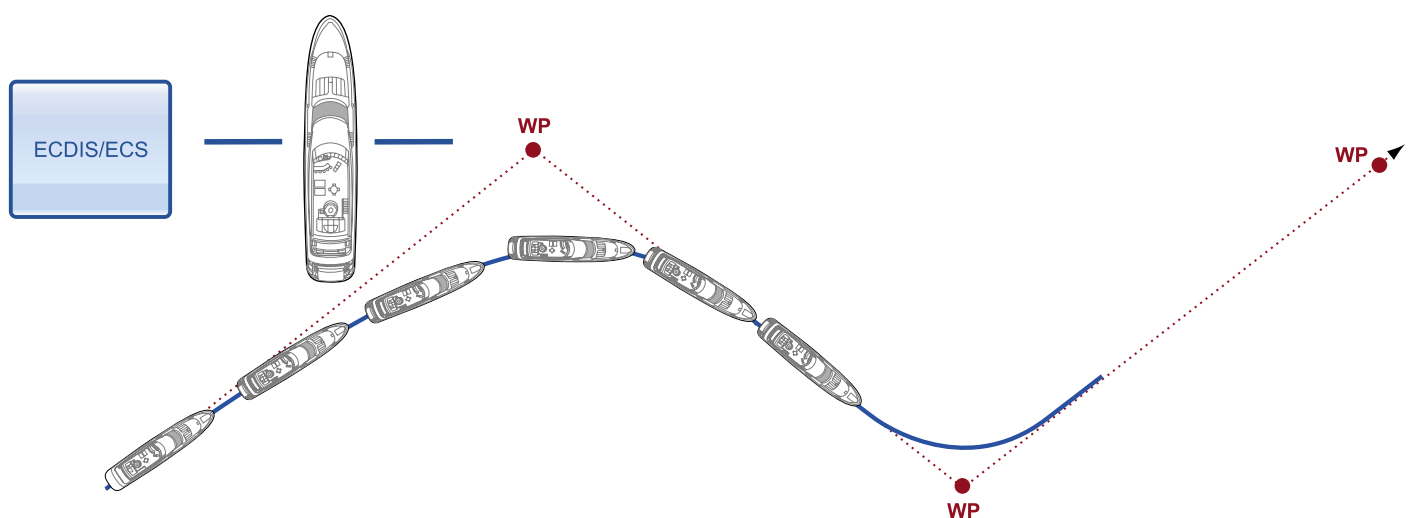
## OVERRIDE

In the “**OVERRIDE**” control mode the heading can be corrected manually using an external override device (-es) like override tiller, jog lever, etc. (**Optionally**).

## AUTONAV

In the “**AutoNAV**” mode Heading-To-Steer and Rate-Of-Turn are set by an external vessel track control system, Category C (ECDIS). Navis JP3000 controls vessel motion on straight legs and turns (Turn Radiuses between route legs).

|                |  |  |  |
|----------------|--|--|--|
|                |  | GYR01  |  |
| T <sub>N</sub> | 042.9  |  |  |
|                | ROT ▶  | SET HDG                                      |  |
|                | 224  | 057  |  |
| SET            | <input type="text"/> 08 <input type="text"/> | <input type="text"/> 07 <input type="text"/> |  |
| RUD            | <input type="text"/> 08 <input type="text"/> | <input type="text"/> 08 <input type="text"/> |  |

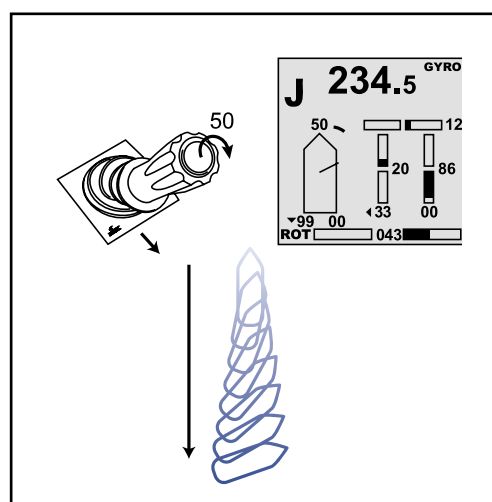
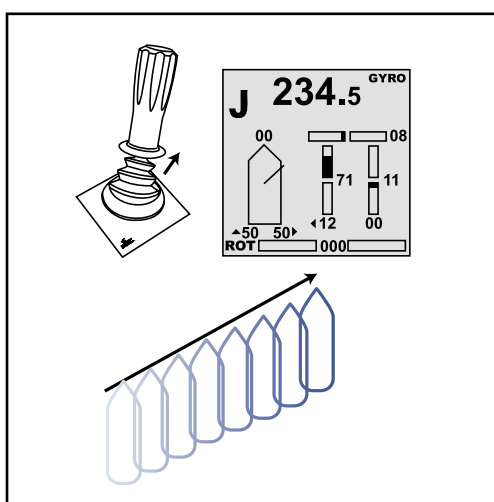
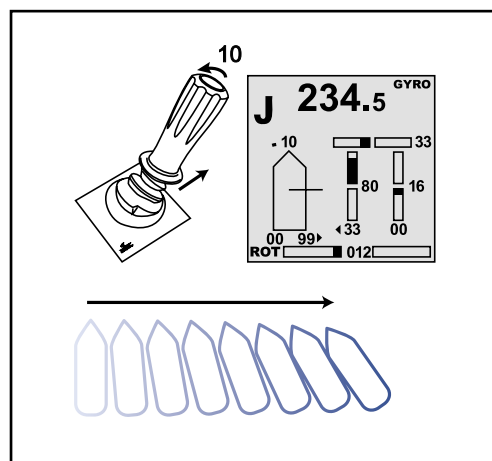


# Modes of operation – Joystick control modes



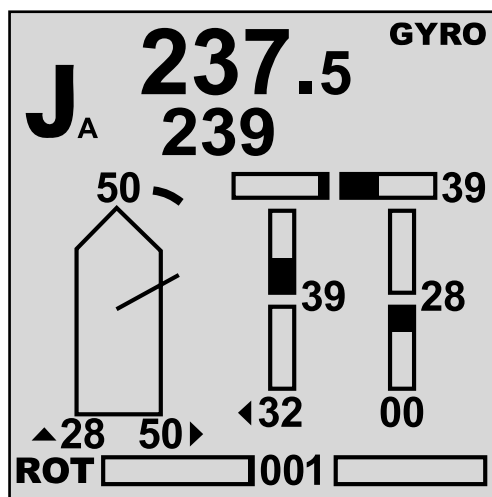
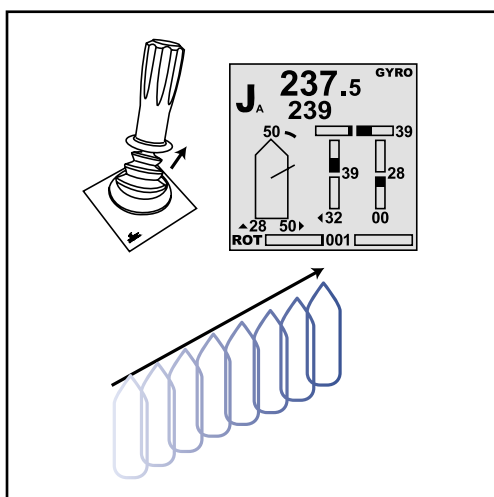
## JOYSTICK MANUAL

The “**JOYSTICK MANUAL**” control mode provides you with the variety of ways to control your yacht motion. The 3-axis joystick allowing you to steer the yacht freely, also makes it possible to set the rotation for the vessel.



## JOYSTICK AUTO HEADING

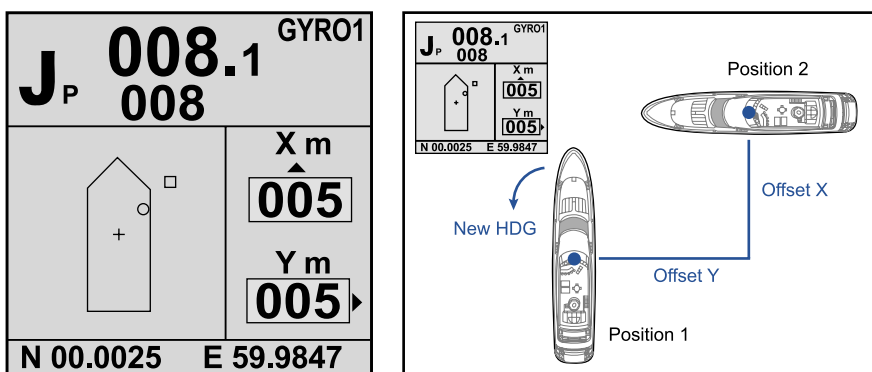
When you switch to the “**JOYSTICK AUTO HEADING**” mode, you can steer the yacht in the fore-and-aft and traverse directions with preset heading and the 3rd axis of the joystick (the rotation moment) is ignored.



# Modes of operation – Joystick control modes

## HOLD POSITION (OPTION)

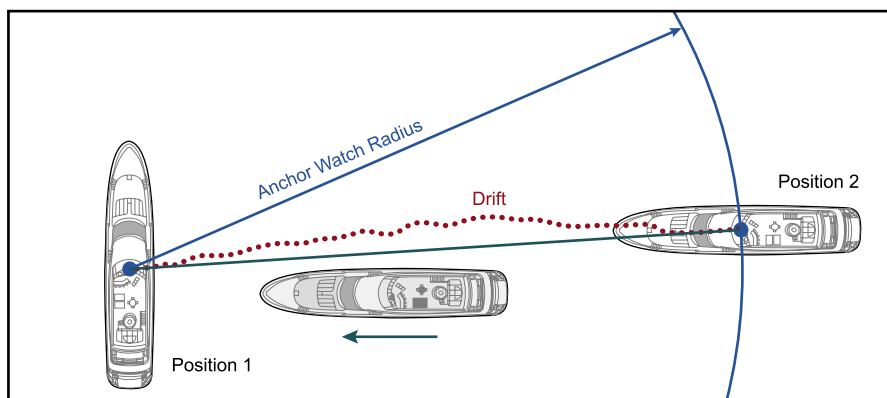
This completely automatic position keeping mode (“**HOLD POSITION**”) maintains the ship in a selected position. Fore, aft and athwartships forces from propellers, rudders and thruster are commanded by the JP 3000 to keep the vessel in preset position. This mode is used for vessel automatic positioning in the open sea, at dock maneuvering, drilling rigs, etc. Joystick is intended to set the initial position or position offset in meters (axis X and Y). Knob is used to set a new heading value (preset heading). The 3<sup>rd</sup> axis of the joystick (the rotation moment) is ignored.



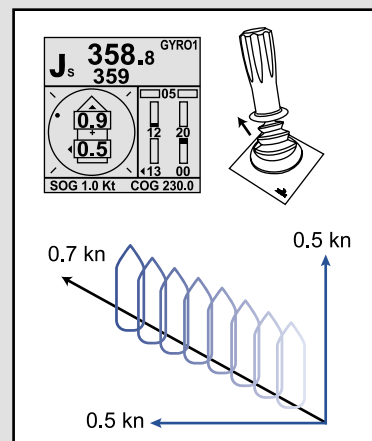
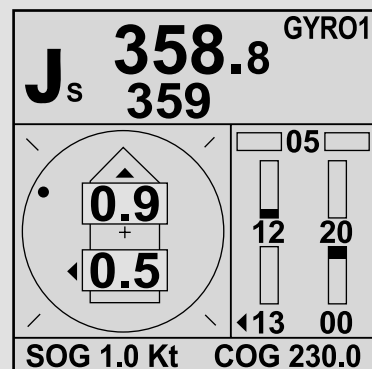
## ANCHOR WATCH (OPTION)

The “ANCHOR WATCH” mode holds a yacht within a set area defined by entering into the system the radius of the circle-like zone, within which the yacht must be kept.

Having arrived to a certain point, the captain simply sets the current position (via GPS) and inputs into the system the radius of the circle within which the yacht will be positioned. All the propulsion is switched to the Stand-by Mode and the yacht starts to drift. When the yacht crosses the boundary of the set area, the system automatically starts all the propulsion, moves the yacht back to the center of the circle area, where the propulsion is again switched to the Stand-by Mode.

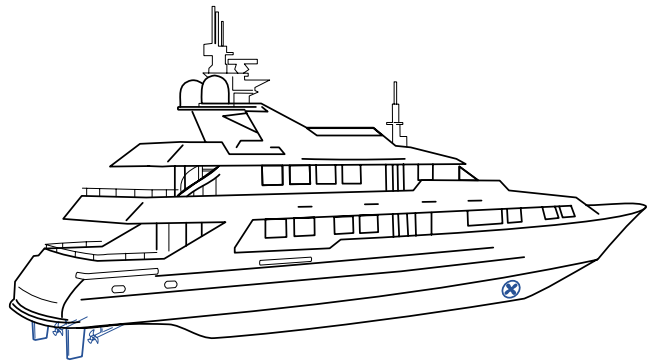


When you switch to the “**SPEED CONTROL & AUTO HEADING**” mode, you can steer the yacht in the fore-and-aft and traverse directions with preset speed and heading. The 3<sup>rd</sup> axis of the joystick (the rotation moment) is ignored. Joystick is intended to set longitudinal and transverse speed (axis X and Y). Knob is used to set a new heading value (preset heading).



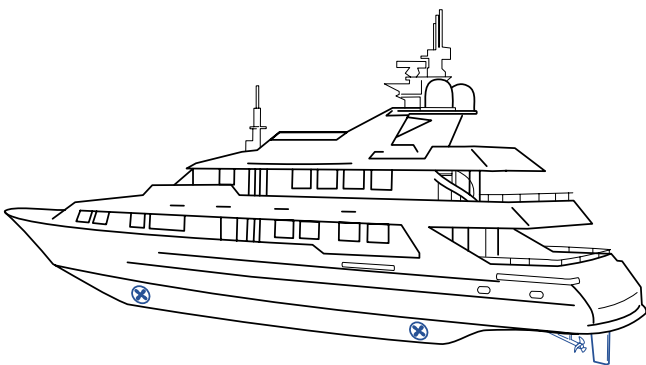
# Thruster configuration

The three minimal configurations of thrusters shown in the pictures make it possible to obtain full control over your super-yacht both in the autopilot and joystick control modes. The precise mathematical ship dynamics model is calculated automatically (advanced "Auto Tune" functionality of JP3000) from the information on your vessel's hydrodynamic parameters and the characteristics of the yacht propulsion units. This allows you to discover the full potential of your vessel and to reduce the fuel consumption in all low speed operations (docking/mooring).



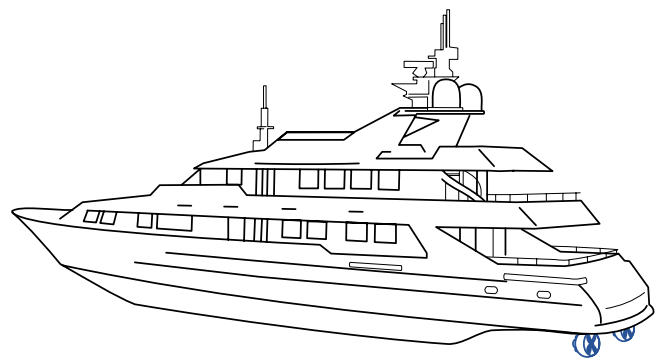
## CONFIGURATION J1

- Two propellers. Either CPP or FPP with reverse clutch
- Two rudders
- Tunnel bow thruster



## CONFIGURATION J2

- One propeller. Either CPP or FPP with reverse clutch
- One rudder
- Tunnel bow thruster
- Tunnel stern thruster



## CONFIGURATION J3

- 2 Stern Azimuth Z-Drives (CPP or FPP)

The Navis JP3000 can be adapted to propulsion units of any make.

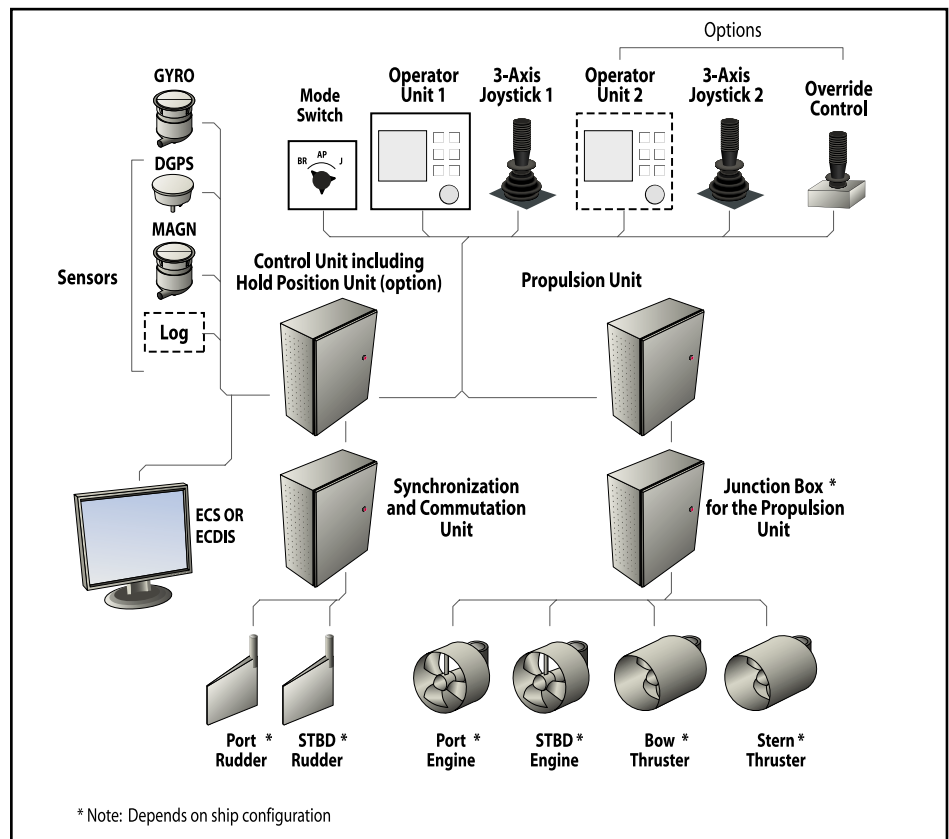
# System configuration

## NAVIS JP3000 DELIVERY SET

- JP3000 operator unit
- 3<sup>rd</sup>-axis joystick
- Propulsion Unit
- Control Unit
- Synchronization and Commutation Unit
- Mode Switch Selector
- Documentation Set
- Spare Parts Set
- Junction Box for the Propulsion Unit (depends on configuration)

## NAVIS JP3000 OPTIONS

- JP3000 Hold Position Control Unit ("Hold Position" and "Anchor Watch" control modes")
- Additional operator unit, including 3<sup>rd</sup>-axis joystick
- Override control PCB



## SERVICE AND SUPPORT

Wherever you are on the globe, Navis offers you a comprehensive package of technical support 24/7 x 365 days a year. The combination of extensive built-in diagnostics, hot-line support, a network of service agents with Navis-certified field service engineers, and the Navis Service Center with Senior JP Engineers ready to fly to your vessel within 24 hours, no matter where it is located, ensures a timely response to any technical problem.

The Navis Service Center in Helsinki provides prompt coordination of service agents and partners to accomplish what needs to be done.





# Navis Group

**Navis Engineering OY - Headoffice**

Tuupakantie 3 A  
FI-01740, Vantaa, Finland  
Tel: +358 9 250 9011  
Fax: +358 9 250 9012  
e-mail: [headoffice@navisincontrol.com](mailto:headoffice@navisincontrol.com)  
[sales@navisincontrol.com](mailto:sales@navisincontrol.com)

**Navis Ltd – R&D Center**

Obvodny channel emb., 14  
Saint-Petersburg, 192019  
Russian Federation  
Tel: +7 812 567 37 63  
Fax: +7 812 567 28 58  
e-mail: [products@navisincontrol.com](mailto:products@navisincontrol.com)