

HUMPHREE®

Trim and Stabilisation systems



NEXT GENERATION
IN **BOAT CONTROL**



www.humphree.com

WHEN EFFICIENCY AND PERFORMANCE REALLY MATTERS!

Humphree proudly presents the new HCS-5

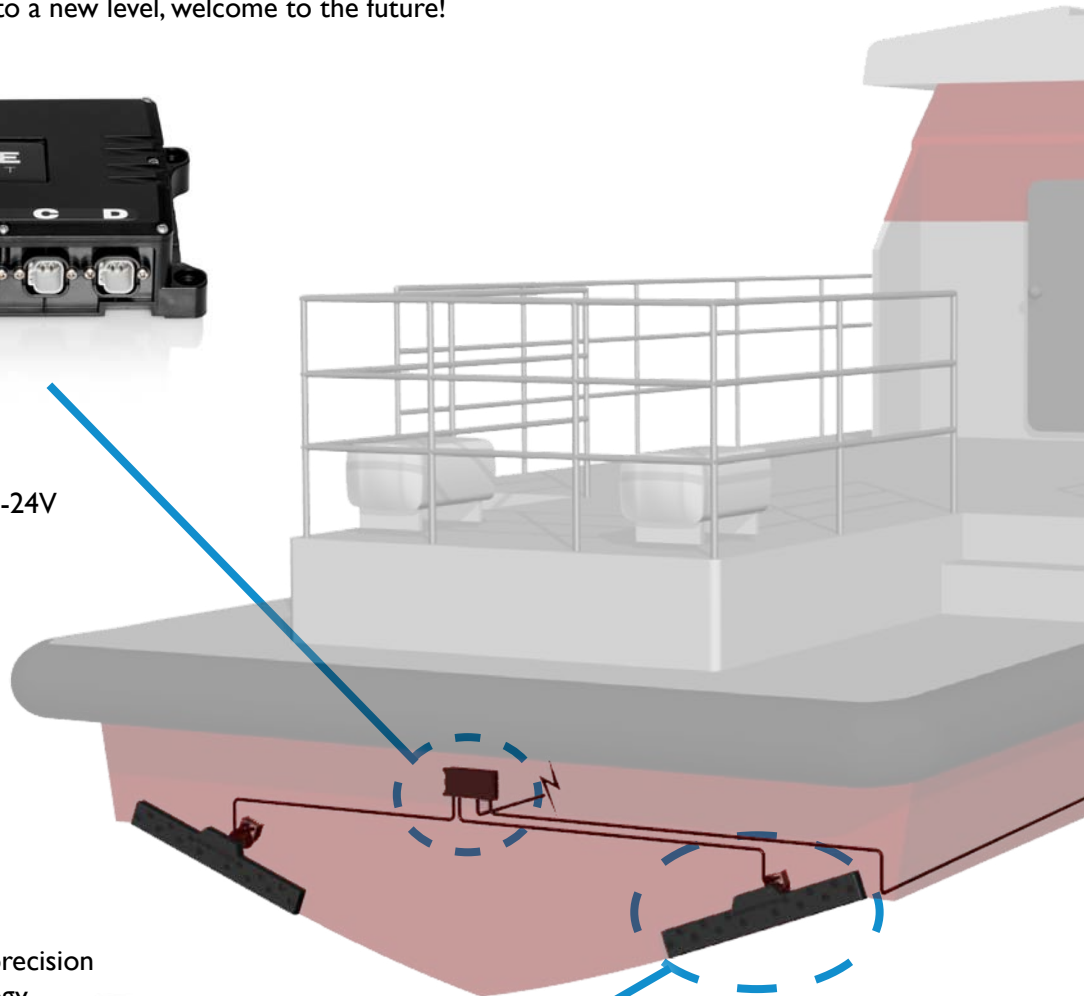
The HCS-5 combines exceptional mechanical quality with electronic control including motion sensors and world class brushless servo motors to provide instant and exact response to the hull dynamics! Adding the fine-tuned boat control options Automatic Trim, Automatic List, Coordinated Turn or Active Ride Control will result in optimum comfort and performance regardless if the captain is a seasoned expert or a less experienced operator.

We just brought boat control to a new level, welcome to the future!



Humphree Control Unit

- Real time processing of data
- Includes motion sensors
- Integrated power distribution, 12-24V
- Mounted on inside transom



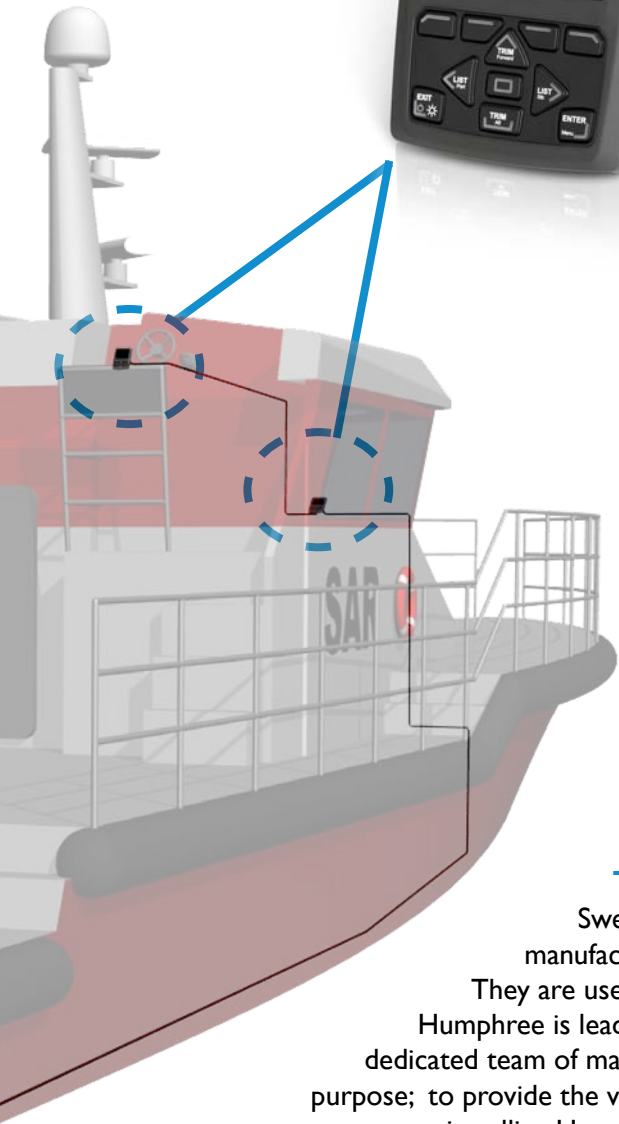
Servo Unit

- Unbeatable response and precision
- Reliable brushless technology
- Waterproof IP 67



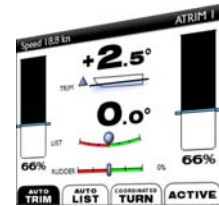
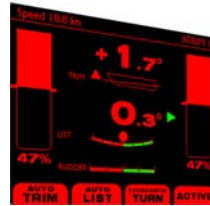
Interceptor

- Robust design in corrosion-free composite materials
- Light and compact unit with low maintenance
- Available in a variety of sizes and types
- Easy to install



Control Panel

- Large colour screen readable in sunlight
- Night mode available
- Easy and intuitive to operate



This is Humphree

Swedish based Humphree, founded in 2002 is today the world's leading manufacturer of Interceptors or "super tabs" as some choose to call them.

They are used for trim and stabilisation of semi-planing and planing hulls.

Humphree is leading the way with new automatic functionalities developed by our dedicated team of marine engineers, hydrodynamic experts and boat operators for a single purpose; to provide the very best in hull dynamics and boat control. An increasing number of customers are installing Humphree systems and the presence is continuously expanding around the globe. Updated information of the Humphree network can be found at www.humphree.com.

Our Philosophy

Regardless of whether you have a pleasure boat or a commercial vessel and independent of propulsion system, there is always a need to adjust the boat dynamics for best performance, comfort and safety, while reducing environmental impact.

We are 100% committed to serve our customers with the target that boats fitted with Humphree products shall perform better than using any other system enabling our customers to stay ahead of the competition.

Humphree | Interceptors

Interceptors in general are an efficient device to optimise running trim for low wave resistance, reduced fuel consumption and improved performance. The Humphree Interceptor has a low weight and a robust design. It is suitable for both mono hull and catamaran application, in planing and semi-planing speeds.

The installation is easy, with a minimum of pre-work needed, and with low maintenance due to the corrosion free materials and simple design. Interceptors are powered by a watertight, state of the art electric actuator, placed on the inside of the transom for easy access and excellent protection.

Interceptor Series | Standard

The Standard Interceptors series uses a blade deployment of maximum 50 mm and is offered in sizes from 350 mm to 1500 mm widths, in steps of 50 mm. With a possibility to mount two or more Interceptors to one hull, they are suitable for boats ranging from approximately 30 ft. up to 180 ft.



Interceptor Series | Asymmetric

The Interceptors can also be delivered in an Asymmetric version, ranging from 500 mm to 1100 mm with side mounted actuator to provide additional flexibility to the installation configuration. Maximum blade stroke is the same as for the Standard Interceptor; 50 mm.

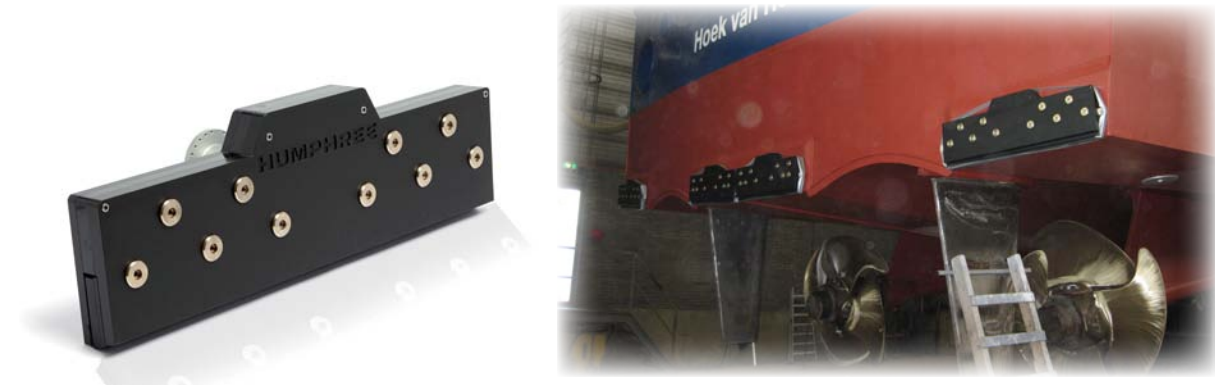


Humphree | Interceptors

Interceptor Series | Extended

The Extended Interceptor series uses a blade deployment of maximum 75 mm and is offered in sizes from 750 mm to 1500 mm widths. This makes them useful for boats ranging from approximately 60 ft. and larger and appropriate for both planing and semi-planing hulls.

The Extended series are especially suitable when the space available is limited and much stern lift is required. The additional lift force generated by the Extended Interceptor is also preferred for maximum performance with Active Ride Control.



Interceptor Series | Custom shaped to fit any transom

All Humphree Interceptors can be custom shaped to fit any boat. This makes them possible to install over propeller tunnels or adapted for any other curvature where straight Interceptors do not match the hull curvature properly.



Humphree Boat Control Systems

The true potential and sensation of the Humphree system is provided through a number of automatic control options. Designed to meet the high demands from boat builders working with the cutting edge of technology to improve performance, comfort and fuel efficiency.

The control panel offers the operator a single interface to control any Humphree Boat Control System, from the Basic version to our most advanced options. Simple and intuitive operation via illuminated touch buttons and a large colour display.

All control systems includes a GPS for automatic retract of the blades when the boat slows down. This together with an automatic cleaning function virtually eliminates all problems associated with marine growth ensuring efficiency even after extended time in the water.

Boat Control System | Basic



The Basic Humphree Interceptor system offers the operator an effective way to optimise the boat speed and ride comfort by manual control of the running trim and list.

If the operator requires automated functions, the Basic system can easily be upgraded to include any of the automatic functions. There is no need to replace any hardware, since all components have been designed for continuous, heavy duty, operation.

Features

- Large display that presents boat's dynamic trim and list angles in real time
- Auto-retracted interceptor blades at slow speed
- Four quick command settings included

Benefits

- Precise manual correction of running trim and list
- Improved fuel economy
- Easy upgrade to automatic control functions

Boat Control System | Automatic Trim Control



Accelerating and operating at different speeds often means the boat will run with various trim angles. In many situations this results in a poor trim angle, high wave resistance, bad visibility and reduced comfort. Instead of manual adjustment of the Humphree Interceptors, the Automatic Trim Control will give full automatic control of the longitudinal trim by pushing a button. The operator can still manually compensate for any uneven list.

Automatic Trim Control can be combined with Automatic List Control and Coordinated Turn Control for maximum performance and comfort on board.

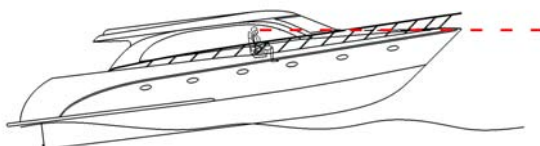
Features

- Automatic control of running trim
- Easy set up in control panel

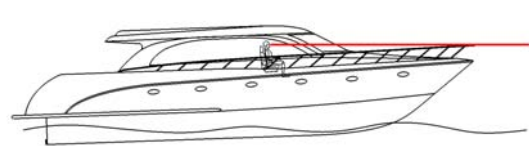
Benefits

- Improved fuel economy, visibility and speed
- Faster acceleration
- Easy upgrade from Basic system

Without Automatic Trim



With Automatic Trim



Humphree Boat Control Systems

Boat Control System | Automatic List Control



Uneven loading, cross winds and varying conditions will normally cause the boat to list. When running in a straight course, Automatic List Control will correct the boat list to a preset target list angle, usually zero degrees. This can be changed by the operator to intentionally list the boat. When the boat enters a turn the system will allow the boat to heel naturally during the turn and once the boat has left the turn the system will continue to correct the boat to the preset target list angle.

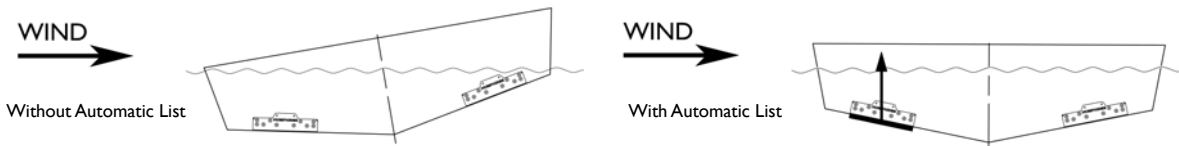
Automatic List Control can be combined with Automatic Trim Control and Coordinated Turn Control for maximum comfort and performance on board.

Features

- Automatic control of list
- Adjustable list target angle
- Easy set up in control panel

Benefits

- Improved comfort
- Easy upgrade from Basic system



Boat Control System | Coordinated Turn Control



For numerous applications the heel angle when turning can be significantly improved to obtain higher speed and increased comfort. The Coordinated Turn Control automatically adjusts the heeling angle of the boat during turns to reduce the side forces for people on board. The system continuously monitors the rudder position during the turn and the Interceptor blade movement is thus automatically coordinated with the rudder movement. With a controlled heel angle, higher turning speeds and better comfort can be achieved.

The boat's turning ability can also be significantly improved as a result of the steering force created by the Interceptor which increases the yaw motion of the boat.

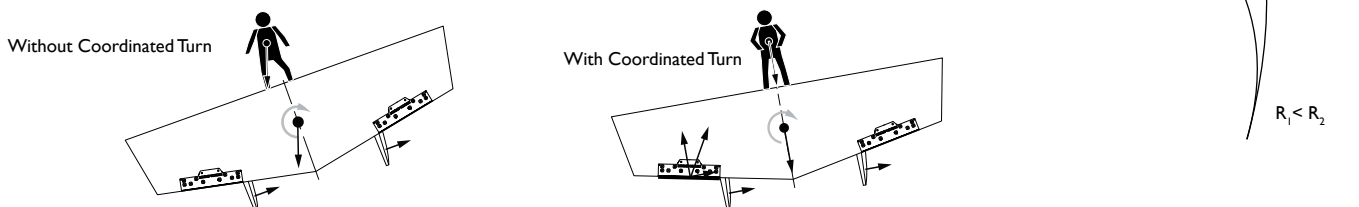
Coordinated Turn Control can be combined with Automatic Trim and Automatic List Control, or with Active Ride Control for maximum comfort on board.

Features

- Automatic control of heel angle during turns
- Interface to most steering systems, including Volvo Penta IPS
- Easy setup in control panel

Benefits

- Controlled heel angle during turns for improved comfort and safety
- Possibility to turn tighter
- Maintain higher speed during turns



Humphree Boat Control Systems

Boat Control System | Active Ride Control



While operating in open seas boats are constantly exposed to waves that will cause roll and pitch motions resulting in reduced comfort on board. With Humphree Active Ride Control system the Interceptors are instantly actuated to provide lift which counteracts these motions and at the same time optimises the running trim and list angle - all in one system. The system includes a Ride Control Unit (RCU) which consists of an advanced digital controller with unique adaptive control algorithms and an advanced sensor package which uses a combination of GPS, gyro and accelerometers to measure 3D rate of turn and ship accelerations.

The combination of responsive electric actuated Interceptors and sophisticated Humphree Active Ride Control provides an efficient ride control system for boats of any sizes, operating from semi-displacing to planing speeds. In the Humphree control panel the system is easily activated or deactivated with a single button press. Since the Humphree Active Ride Control system will retract the Interceptors automatically when not needed, there is no added hull resistance when the system is deactivated. This is unique among marine stabilisation systems.

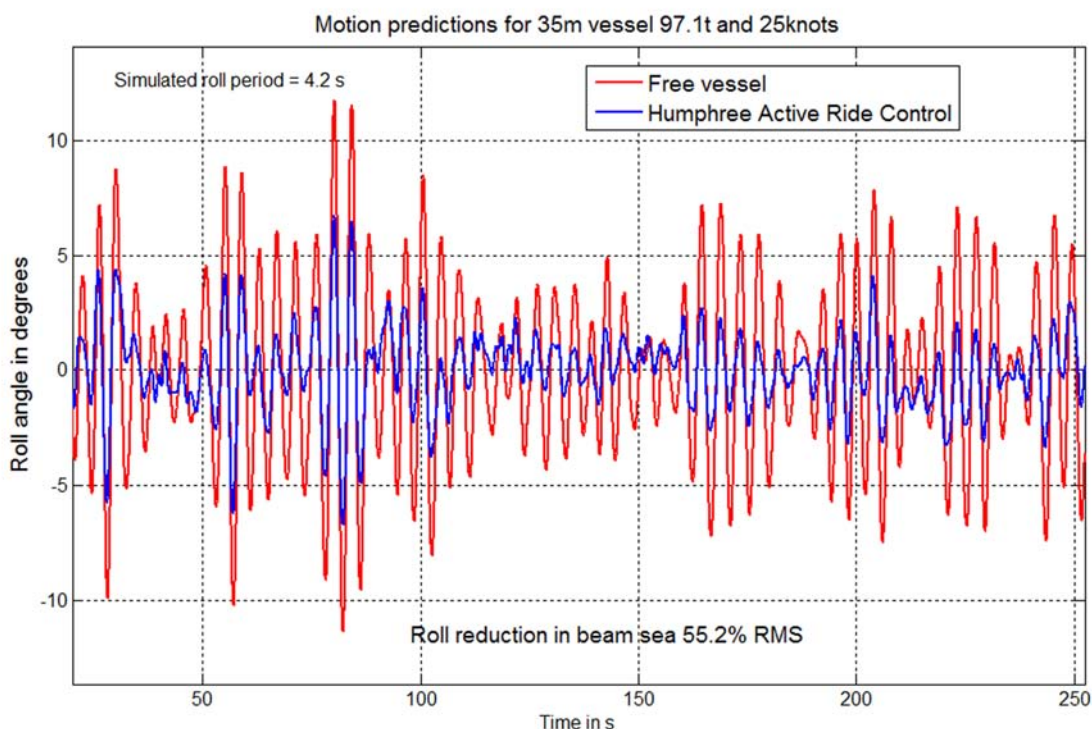
Features

- Advanced Ride Control Unit (RCU)
- Includes Automatic Trim Control and Automatic List Control
- Computer simulations for each project
- Easily installed or retrofitted on most mono hulls and catamarans



Benefits

- Efficient roll- and pitch damping at semi-planing and planing speeds, for comfort and safety
- “All in one” system – Trim and Stabilisation
- Improved operability with reduced motions
- Minimal added drag and weight
- Easy upgraded from any other Humphree boat control systems



Humphree | Boat Control Systems

Boat Control System | Interceptor Steering Assistance



Water jet powered boats experience significant power losses when deflecting the complete thrust force to steer the vessel. These power losses result in higher fuel consumption and speed loss during the turn but with Humphree Interceptor Steering Assistance this can be avoided. Deploying a few millimetres of Interceptor generates the same steering force but significantly less power loss than deflecting the jet thrust flow. The system, involving vertically installed transom Interceptors in combination with water jet propulsion, enables Interceptor steering with fixed neutral jet buckets for smaller steering commands. For larger steering commands a combination of Interceptors and water jet deflection will result in increased steering force and reduced turning radius.

Interceptor Steering results in a faster response to a steering command, giving a straighter course, improved fuel economy, better control, increased comfort and less wear of the water jet steering gear. The system can easily be integrated with any autopilot and water jet, and can be used as in an emergency steering backup mode for increased safety.

The steering force from the Humphree steering Interceptor typically corresponds to a bucket deflection of between 5 and 15 degrees. For larger steering commands the water jet buckets will start to deflect and the Interceptors will contribute with up to 50 percent increased steering force at speeds.

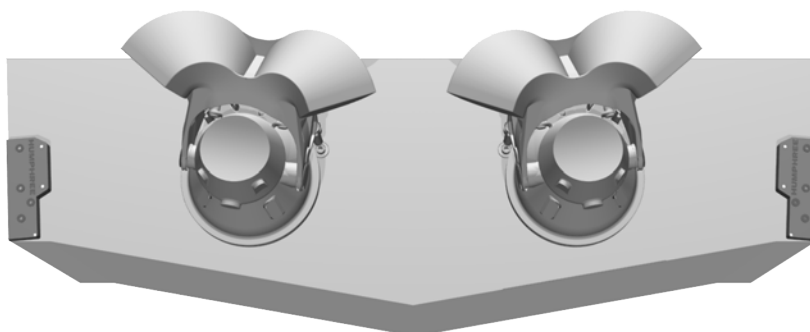
Features

- Secondary boat steering system
- Integration with any water jet brand
- Integration with any autopilot

Benefits

- Improved fuel economy
- Better course keeping
- Less wear of water jet gears
- Higher maintained speed while turning
- Improved turning radius

Mono hull

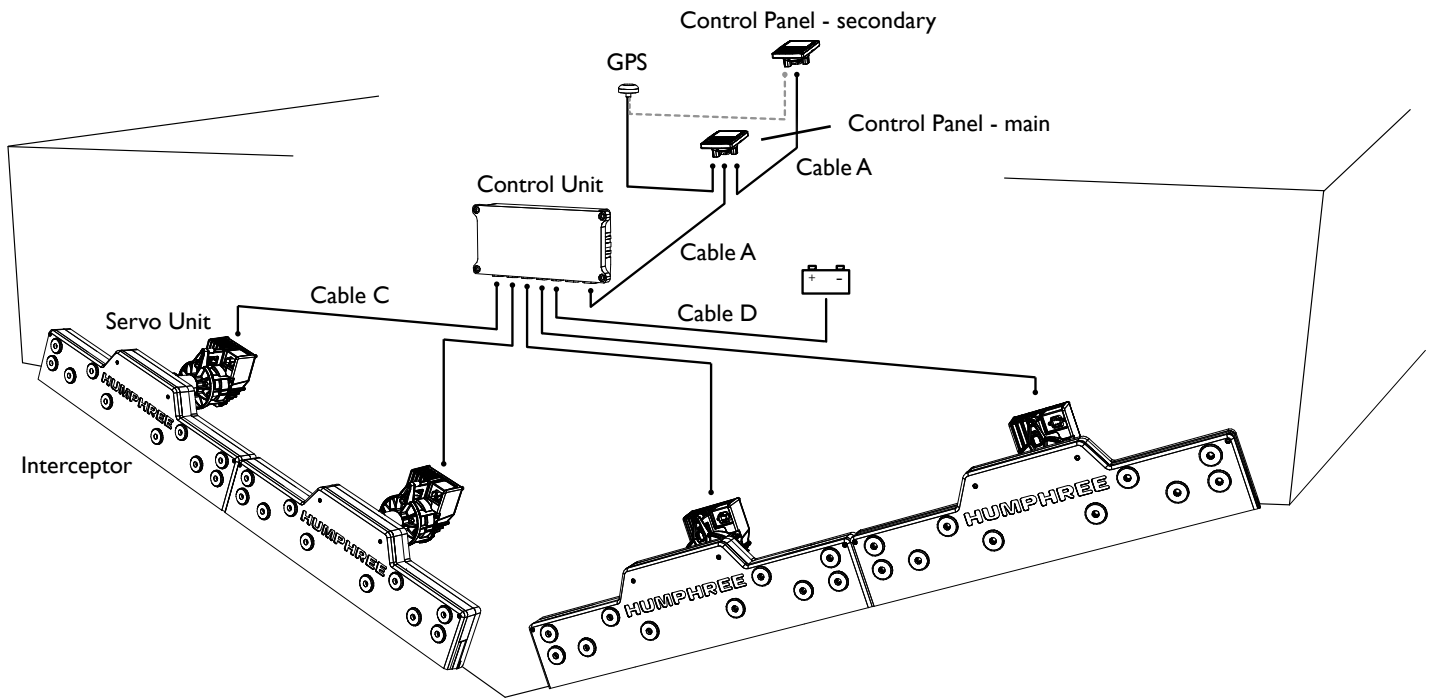


Catamaran

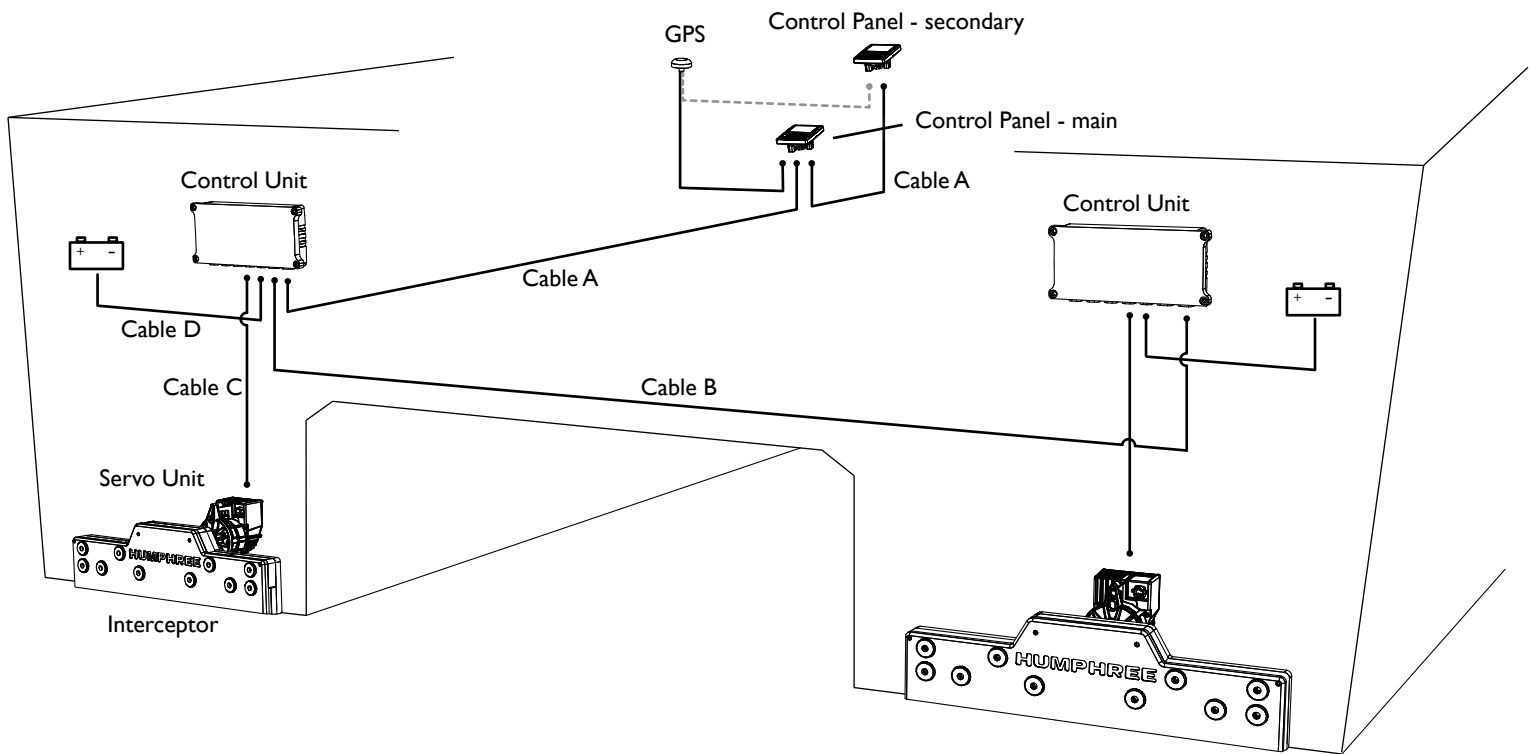


Humphree System Arrangement

General | System Arrangement - Mono hull



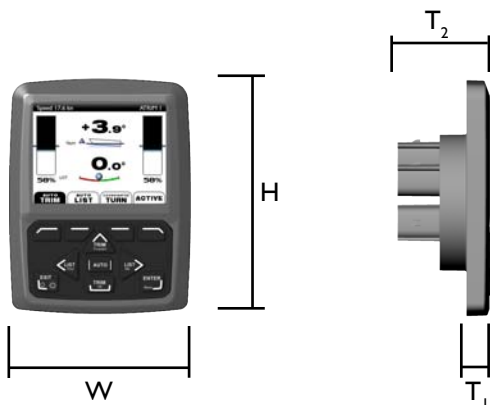
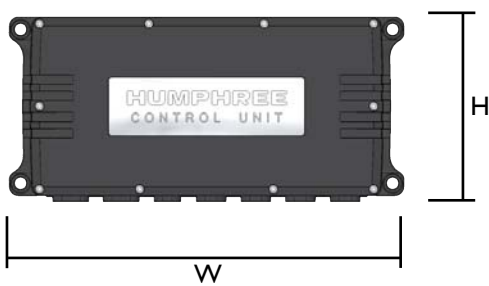
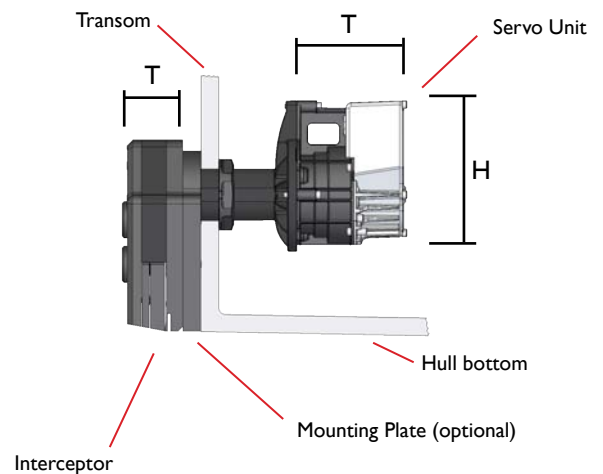
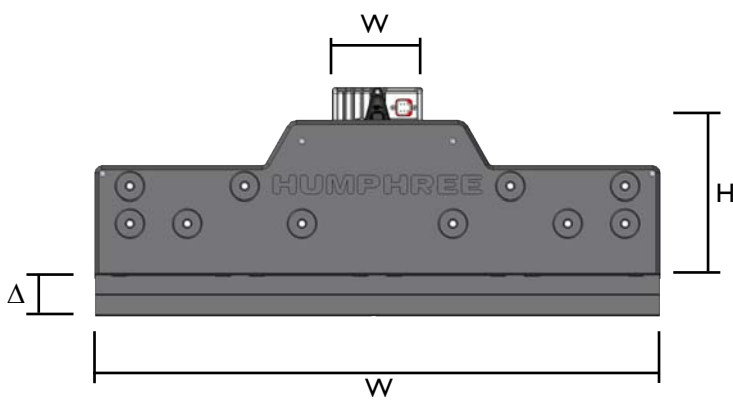
General | System Arrangement - Catamaran



Humphree Interceptors | Dimensions

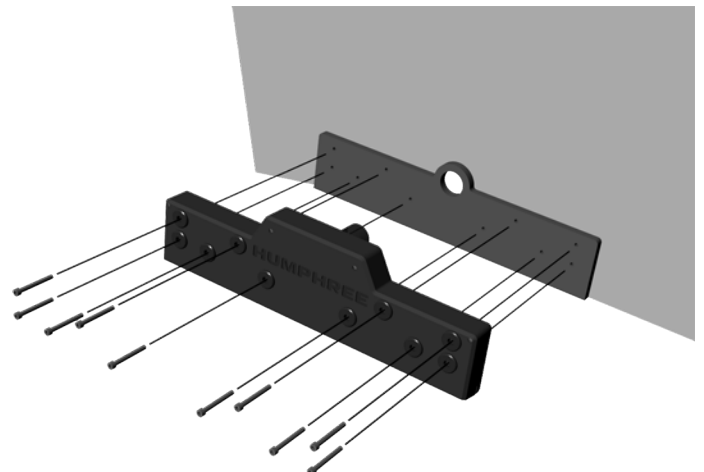
| Type | W x H x T (mm) | Weight (kg) | Blade stroke, Δ (mm) |
|----------------------|---------------------|-------------|-----------------------------|
| Standard Interceptor | 350-1500 x 210 x 60 | from 5 | 50 |
| Extended Interceptor | 750-1500 x 285 x 70 | from 17 | 75 |
| Servo Unit | 124 x 159 x 121 | 2 | - |
| Control Unit | 343 x 160 x 58 | 1 | - |
| Control Panel | 102 x 132 x 14/52 | 0.2 | - |

| Type | Length (m) | Description |
|---------|----------------------------|--|
| Cable A | 10, 15, 20, 25, 30, 40, 50 | From Control Unit to Control Panel and between Control Panels |
| Cable B | 5, 10, 20 | Between Control Units |
| Cable C | 4, 8 | From Servo Unit to Control Unit. 8m cable applies to 24V DC only |
| Cable D | 3.5 | From Control Unit to power supply |



The Mounting Plate is commonly fixed to the hull with through hull bolts. It is prepared from factory with stainless steel inserts for mounting the Interceptor to the plate.

Bolts for fixing Interceptor to the Mounting Plate are included in the delivery.



Humphree Course Stabilising Fixed Fins

The Humphree Course Stabilising Fixed Fins are mounted to the hull bottom close to the transom in order to improve course keeping characteristics of the boat. Consequently, the fins reduce losses associated with excessive yaw motions and correcting actions of the steering system, while adding only a minimal of resistance. The fins are specially designed to avoid cavitation related problems at higher speed.



The fins are well suited for both new and retrofit applications. The bolt pins are designed to break off if the fin hits an underwater object where the fin separates from the hull with minimal damage to the hull structure. The fixed fins are made of aluminium or carbon fibre for strength, low weight and excellent corrosion resistance. Fins and bolt pins are shipped factory assembled.



Humphree Sub-Cavitating Fixed Fins | Below 40 knots

HSFF400



HSFF650



Humphree Ventilated Fixed Fins | Above 40 knots

HVFF500



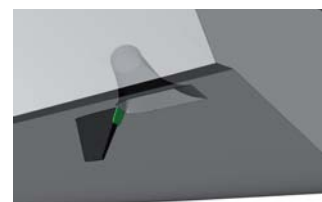
Humphree Exhaust Fins

HEF500



Benefits

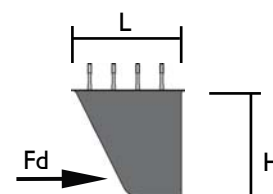
- Optimum exhaust back pressure
- Improved transport of exhaust gases
- Improved course keeping and manoeuvring
- Increased passenger comfort and reduced noise



Humphree Exhaust Fin offers improved course stability and excellent control of under water exhaust back pressure in one package. The fin makes it possible to reach the optimal exhaust back pressure for the specific engine by using a custom shaped plate at the rear end of the fin. A wake is created behind the plate which enhances the transport of exhaust gases and offers excellent damping of exhaust noise resulting in improved comfort on board.

Course Stabilising Fixed Fins | Dimensions

| Type | Material | L x H x T (mm) | Weight (kg) | Fd@30kn (N) | Fd@40kn (N) | Fd@50kn (N) | Bolts |
|---------|----------|----------------|-------------|-------------|-------------|-------------|-------|
| HSFF400 | Alu. | 422 x 402 x 60 | 13 | 178 | 304 | - | 4 |
| HSFF650 | Carbon | 666 x 650 x 80 | 19 | 420 | 721 | - | 6 |
| HVFF300 | Alu. | 498 x 300 x 66 | - | - | - | - | 3 |
| HVFF400 | Alu. | 576 x 400 x 68 | - | - | - | - | 4 |
| HVFF500 | Alu. | 673 x 502 x 70 | 29 | 327 | 413 | 612 | 5 |
| HEF500 | Alu. | 673 x 502 x 70 | 29 | - | - | - | 5 |



HUMPHREE®

www.humphree.com - for your closest Humphree representative

The information contained in this leaflet is subject to change without notification.

Copyright © Humphree 2012. All rights reserved.