

# Active ride control using Interceptor Technology

Per Landegren  
MD at Humphree

**HUMPHREE®**



# What is an Interceptor?

HUMPHREE®



**Known as:** A high-speed boat with fast-reaction capabilities intercepting other boats.

# Interceptor technology

HUMPHREE®



# Interceptor technology

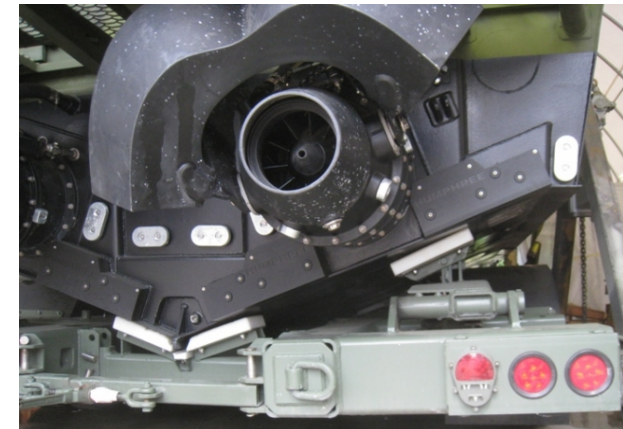
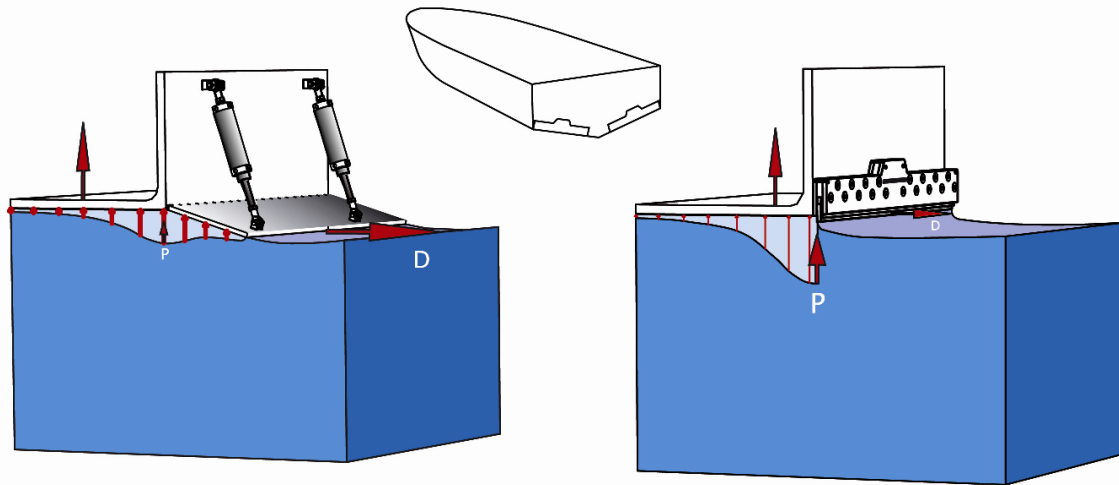
HUMPHREE®

## Working principle:

When a blade is deployed perpendicular to a water flow with an air ventilated backside, a high pressure or lift force is developed on the hull forward of the interceptor.

It is the most efficient way to produce a lifting force on a planning hull bottom.

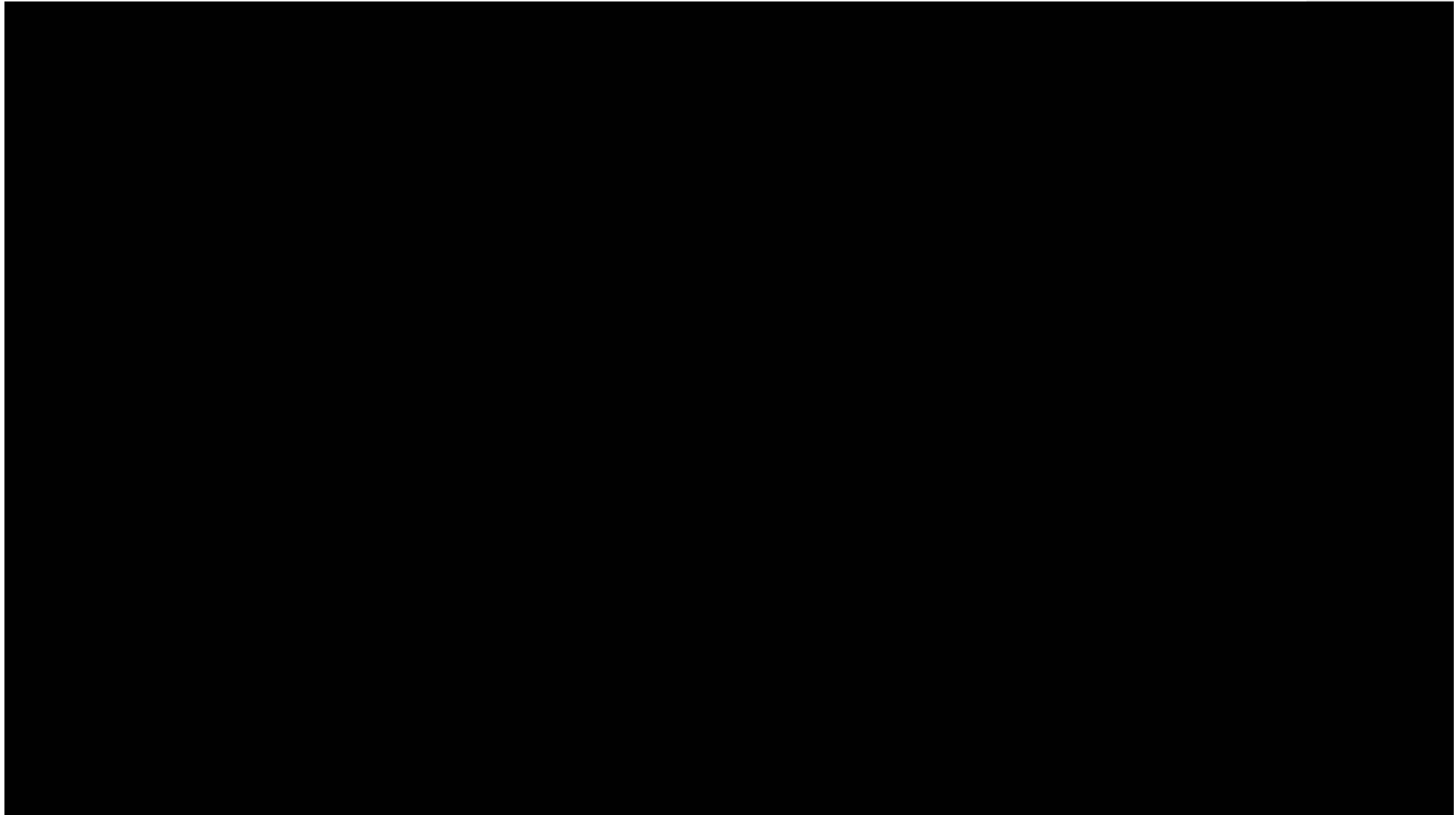
**Small deployment = Large lift**



# Short movie - Interceptor Lift force

# Interceptor Lift force

HUMPHREE®



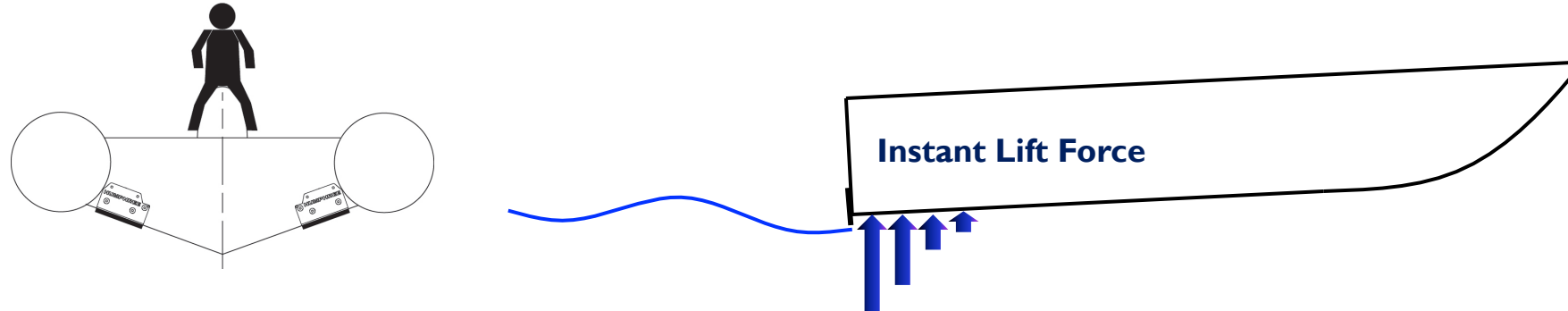
# Interceptor Lift force

HUMPHREE®

**Example:** 350mm wide – 30mm deployment (10m boat 3-5 tons)  
Lift force at 30 knots: 570kg (1,250 lbs)

## **Response of Interceptor:**

A very fast electrical driven interceptor blade can provide full lift force in about 0.7seconds



# Interceptor Lift force

HUMPHREE®

**Can this high instant lift force  
be used to dampen motions ?**

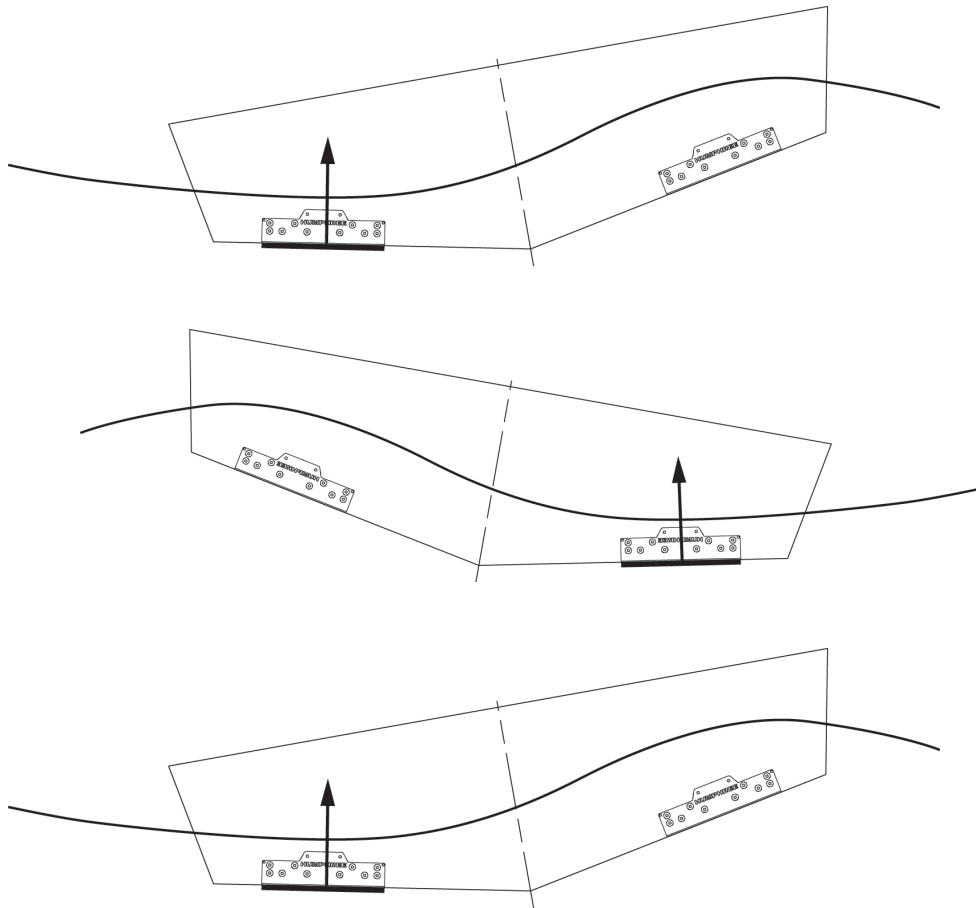




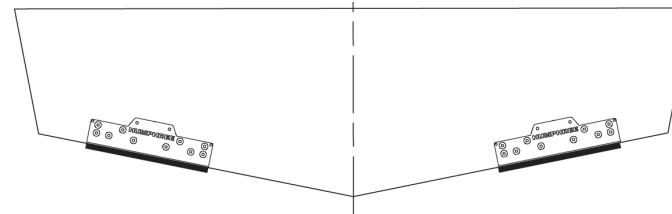
# Using the force!

HUMPHREE®

## Counteracting Roll:



## Counteracting Pitch:



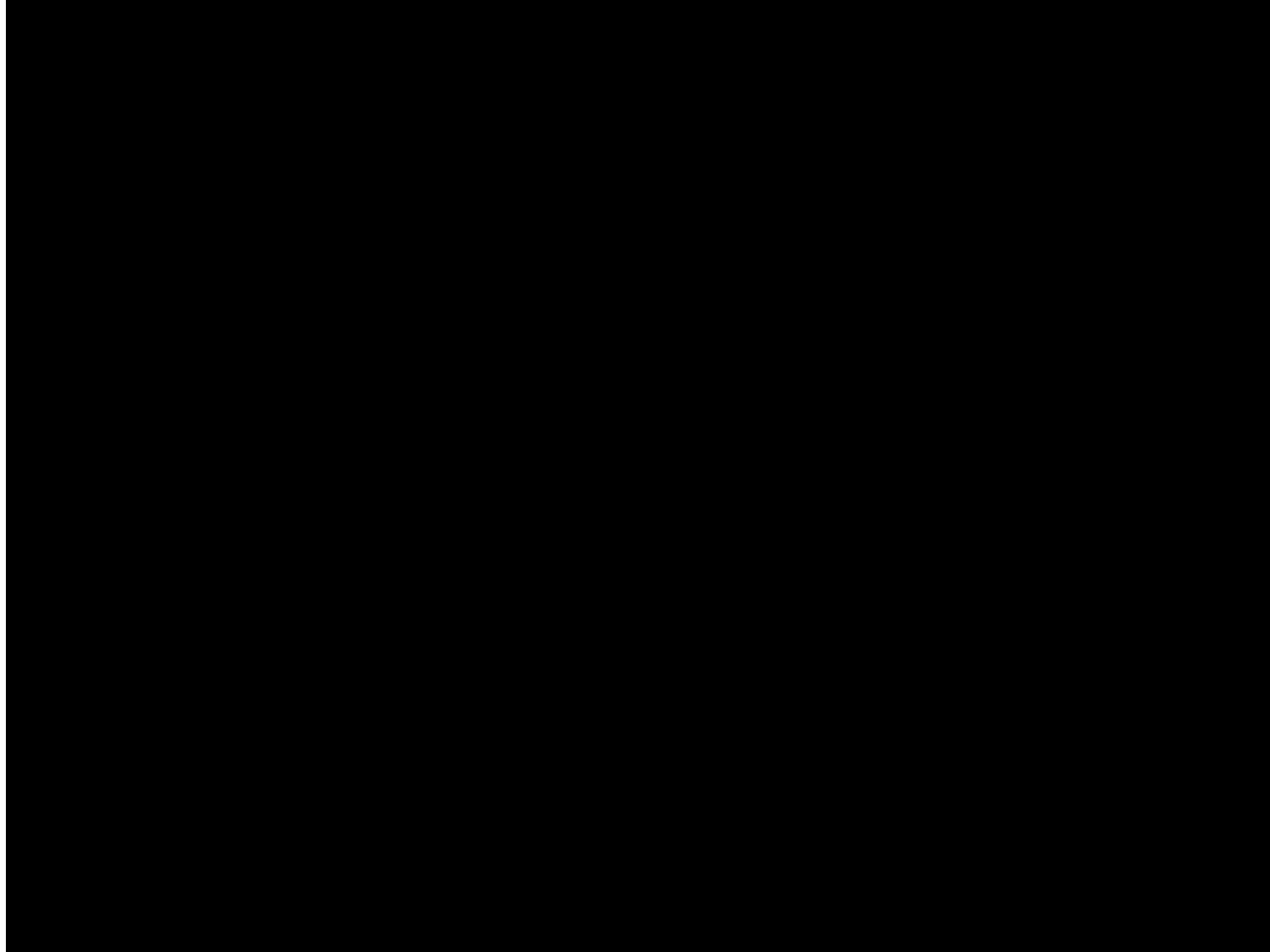
Inertia Measurement &  
Control Unit



**Short movie**  
**- Active Ride Control using interceptor lift forces**

# Active Ride Control using interceptor lift forces

HUMPHREE®



# What is the result?

HUMPHREE®

## Head Sea:

- Control of bow rise
- Reduced slamming forces
- Reduced risk of injuries
- Improved Control!

## No good



## Good



## Following Sea:

- Less Yaw and Roll motions = Boat runs more even keel
- Less risk of broaching
- Helmsman can drive with less fatigue

# What is the result?

HUMPHREE®

## Beam Sea:

- Reduced roll motions
- Improved coarse stability
- Improved Control!



## **Positive:**

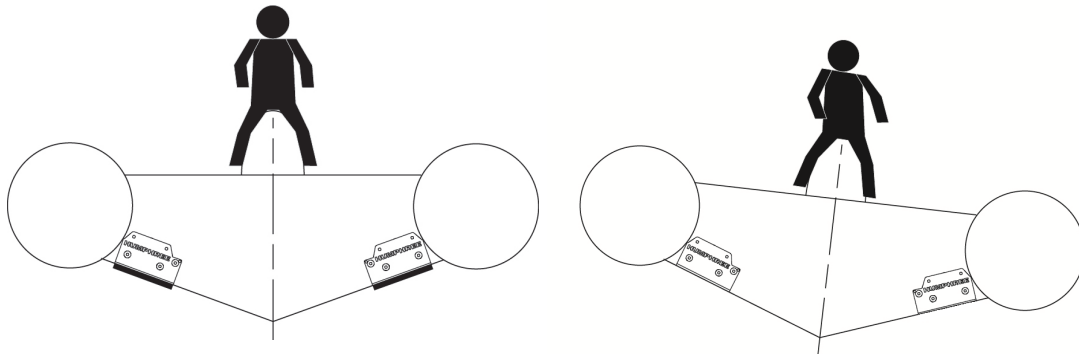
- Can operate at higher speeds
- Less risk for seasickness
- Less human fatigue
- Less stress on hull and human

## **No negative aspects!**

- No added drag
- No added weight
- Used for stabilisation and higher speed at the same time!

## **Limitations:**

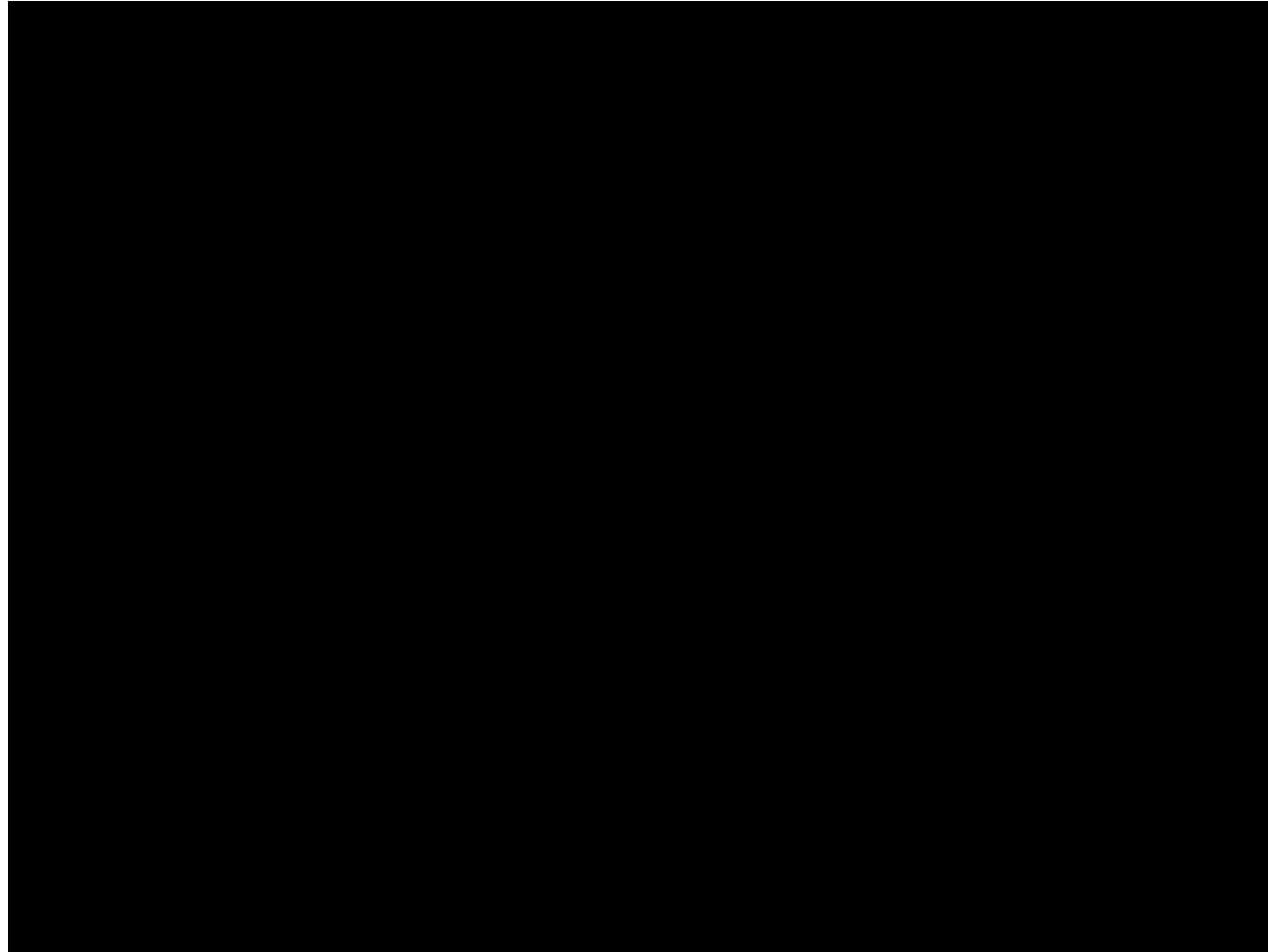
- Need for vessel speed, no zero speed stabilisation



**Reference example:**

**Riverhawk Seastriker – ACTIVE Interceptors  
22m Fast patrol craft**

# Riverhawk Seastriker – ACTIVE Interceptors



HUMPHREE®

# Riverhawk Seastriker 22m

## Fast Patrol Craft



HUMPHREE®

RIVERHAWK  
FAST SEA FRAMES

**Interceptors – ACTIVE Ride Control** (LOA: 22 meter, Operating speed: 20 - 50 knots)

“ACTIVE Interceptor stabilisation responded extremely well and kept the boat very even keel”

“There was a following sea with 2-3 feet chop which had zero effect on the ride at 46 knots“

“Very navigable with the ACTIVE interceptors and a speed of 40-45 knots”

“In quartering seas, with ACTIVE on, interceptors took care of keeping her on even keel and I pretty much kept the tiller loose in my hand and let the boat steer itself. This is a very strong advantage to assisting the helmsman during long transits and reducing his fatigue“

— **Adrian F. Bishop**  
**Mission Assurance International**



# What boats can use interceptors?

**Monohulls:** Any size - Tested from 7m to 90m  
Semi planing & planing

**Catamarans:** Any size - Tested from 13m to 100m  
Semi planing & planing

HUMPHREE®



For comfort and minimizing injuries at high speed, use a combination of a well designed hull, seats with shock mitigation and Active Interceptors!

**Thank you for listening!**