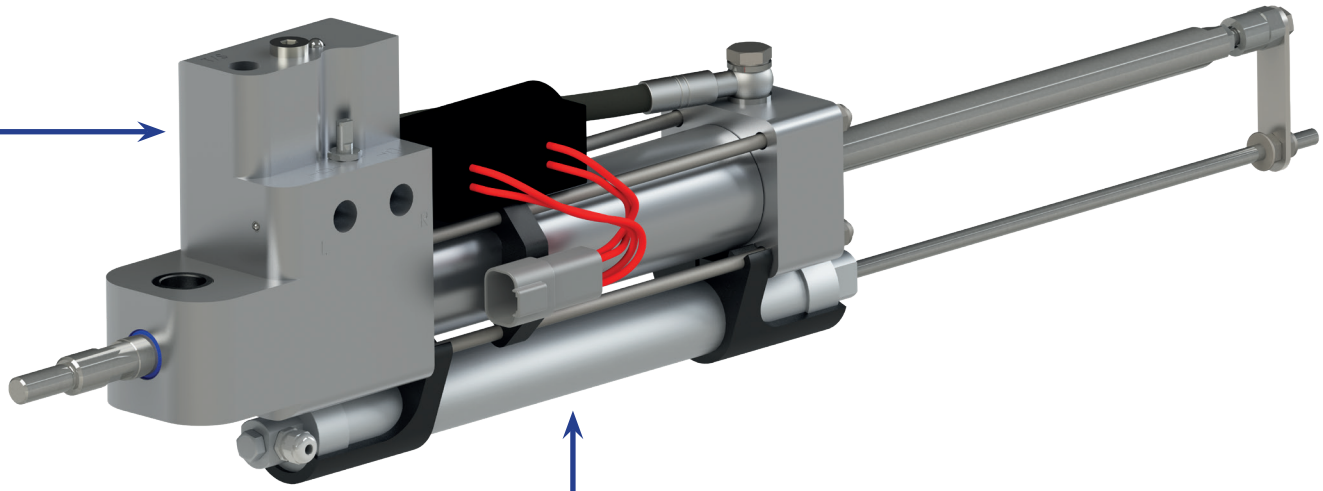
Introducing the Marlic 3520 Steering Cylinder

Fully Integrated 3-in-1 Steering Cylinder Design for Mercruiser Sterndrives

INTEGRATED CONTROL MODULE

Advanced valve system featuring:

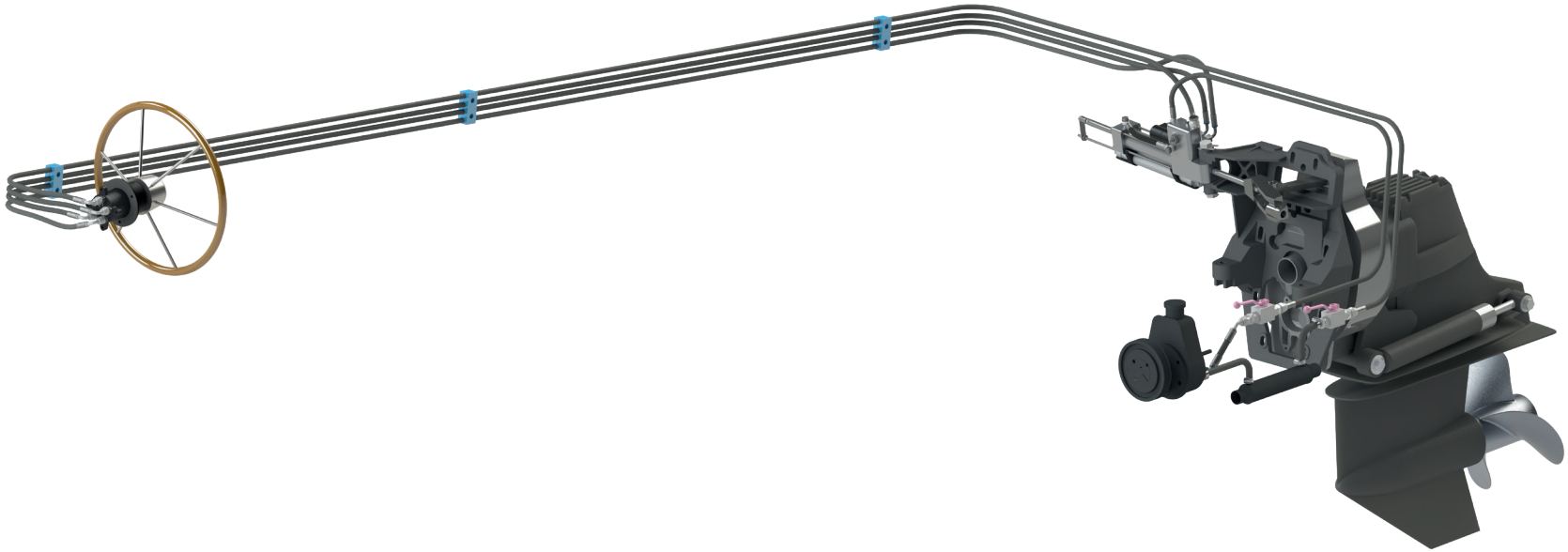
- *Belt-driven pump connectivity*
- *OSPM - Power steering at the helm*
- *Solenoids - Direct autopilot control*
- *Adjustable electronic steering speed*
- *Load-independent steering speed*
- *Integrated bypass valve*



INTEGRATED STEERING CYLINDER

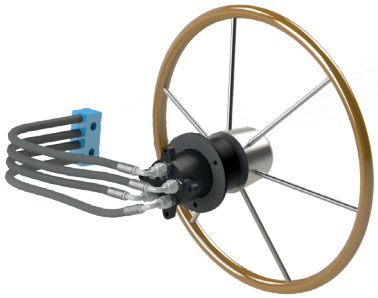
INTEGRATED RUDDER SENSOR

Direct-fit for Mercruiser Sterndrive



OSPM Helm Connectivity

For effortless and precise control.



Fits Directly on the Inner Transom Plate

Simplified installation and comprehensive upgrade.

Belt-Pump Connectivity

For optimized energy efficiency.

Proven Technology

Relied on for decades in industrial and marine hydraulic steering systems

- ☑ *Integrated solenoid directional valve*
- ☑ *Mass-produced technology since the 1940's*
- ☑ *Used in marine autopilots since the 1970's*
- ☑ *Third-party approval (CE and ABYC)*

- ☑ *Hydraulic OSPM-Technology for helm power steering*
- ☑ *Invented by Danfoss in the 1960´s*
- ☑ *Used in marine applications since the 1980's*
- ☑ *Third-party approval (CE and ABYC)*

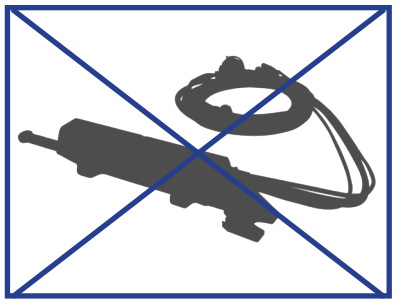
No need for Manual Helm Pumps

No need for Power-Assist Pumps

No need for Autopilot Pumps

No need for Electro-Hydraulics

No need for Electrical Actuators



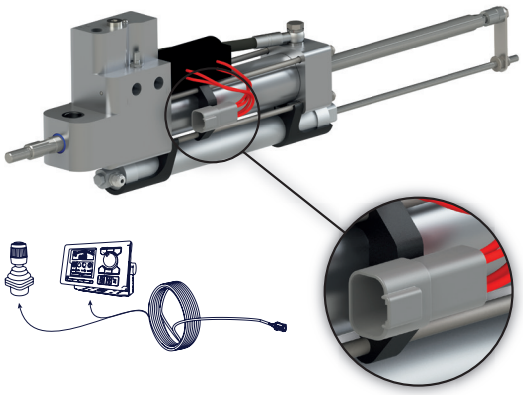
Product Highlights

- *Full Hydraulic Power Steering at the helm enabled by OSPM technology*
- *Integrated solenoid valve enables plug-and-play for direct autopilot and joystick control*
- *Integrated rudder position sensor for simplifed installation*
- *Utilizes main engine-mounted hydraulic pump ("Belt-driven pump") for both helm and electronic steering features*
- *No need for additional electro-hydraulic power-assist pumps or autopilot pumps*
- *Adjustable steering speed for electronic steering features - without affecting steering speed at the helm*
- *Pressure-compensated flow control enables constant steering speed regardless of load changes to the rudder*
- *Safe steering - effortless and precise control, and no electricity needed for helm steering*
- *Safety feature #1: Emergency "manual-hydraulic steering" automatically activates if hydraulic power-pack fails to operate*
- *Safety feature #2: Integrated bypass valve to disengage all hydraulic steering*
- *Simplified installation with increased overall sustainablity and cost-effectiveness*
- *Integrated bypass valve facilitates self-bleeding, providing a clean installation with zero oil loss*
- *Patent-Pending Solution with CE- and ABYC-certifications*

Marlic Product Features

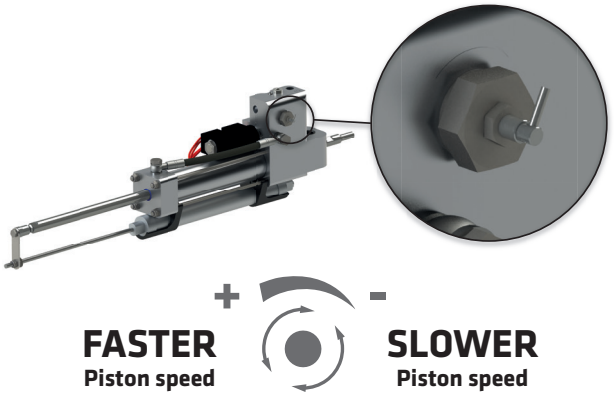
Integrated Solenoid Valve

Plug-and-Play for autopilot and joystick control.



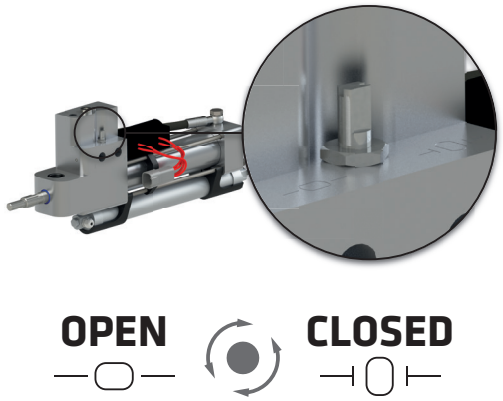
Adjustable Electronic Steering Speed

Without affecting steering speed at the helm.



Integrated Bypass Valve

Just open to disengage all hydraulic steering.

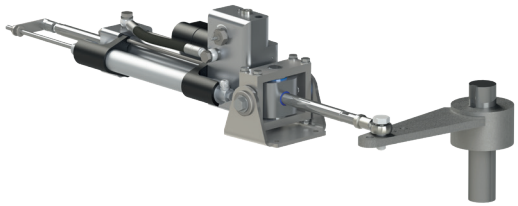


Integrated Rudder Sensor

Simplified installation of rudder feedback.

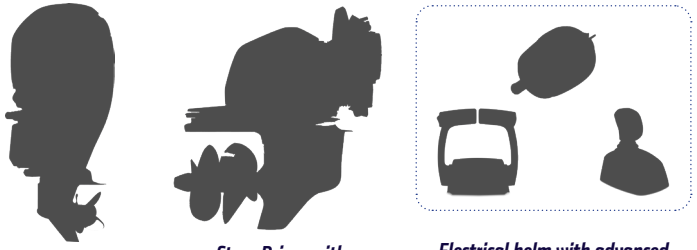
Fits Traditional Rudders

Rudder sensor can be fitting on either side.



Scalable design to fit any application

Our full hydraulic, integrated design technology fits all.



Outboard Engines

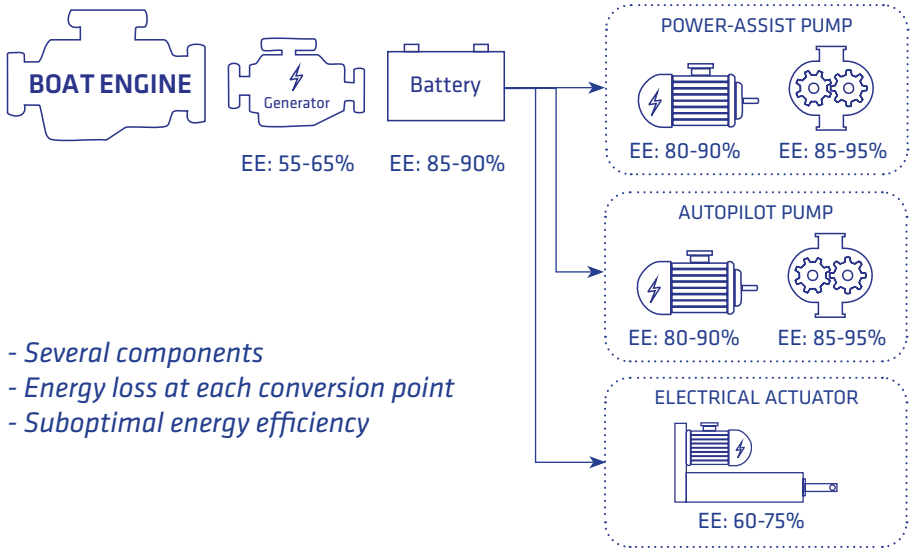
Stern Drives with Outboard Steering Cylinders

Electrical helm with advanced joystick and throttle systems

Increased Energy Efficiency with Belt-Driven Pump Connectivity

Traditional Electro-Hydraulic or All Electrical Setup

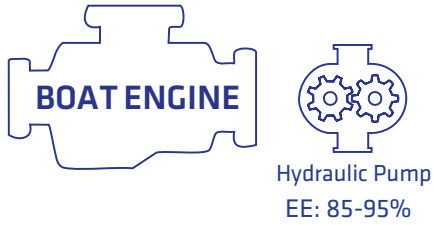
System Energy Efficiency (EE): 30-40%



- *Several components*
- *Energy loss at each conversion point*
- *Suboptimal energy efficiency*

Belt-Driven Hydraulic Pump

System Energy Efficiency (EE): 85-95%



- *Superior energy efficiency*
- *Superior hydraulic power*
- *No electro-hydraulic pumps required*

- ***Low Energy Efficiency (30-40%)***
- ***Inferior Energy-to-Force Ratio***
- ***Significant investment required***
- ***Many potential failure points***
- ***Inferior Sustainablity***

- ***Superior Energy Efficiency (85-95%)***
- ***Superior Energy-to-Force Ratio***
- ***Cost-Effective Solution***
- ***Rugged and Durable solution***
- ***Increased overall Sustainablity***

At present, these statements have not been validated through formal testing or third-party evaluation, but are based on logical engineering reasoning.

Increased Sustainability with Marlic

Energy Efficiency & System Integration

- ☑ *Low energy consumption*
- ☑ *Minimal battery pack requirement*
- ☑ *Connects to belt-driven hydraulic power pack*
- ☑ *Superior energy-to-force ratio*
- ☑ *Third-party compatibility* (OSPM helms, Autopilot, Joystick, etc.)

Functional Simplicity

- ☑ *Simplified all-in-one design*
- ☑ *Analog design - No programming required*
- ☑ *Simplified Installation*
- ☑ *Sku consolidation - Fewer components*
- ☑ *Lower total inviromental impact*

Durability and Circular Design

- ☑ *Rugged design enables long product lifespan*
- ☑ *Less potential failure points*
- ☑ *Simplified repair and component replacement*
- ☑ *Simplified separation for end-of-life recycling*

Regulatory Compliance

- ☑ *CE-Certified construction (IMCI Certificates)*
- ☑ *ABYC-Certified construction (IMCI Certificates)*

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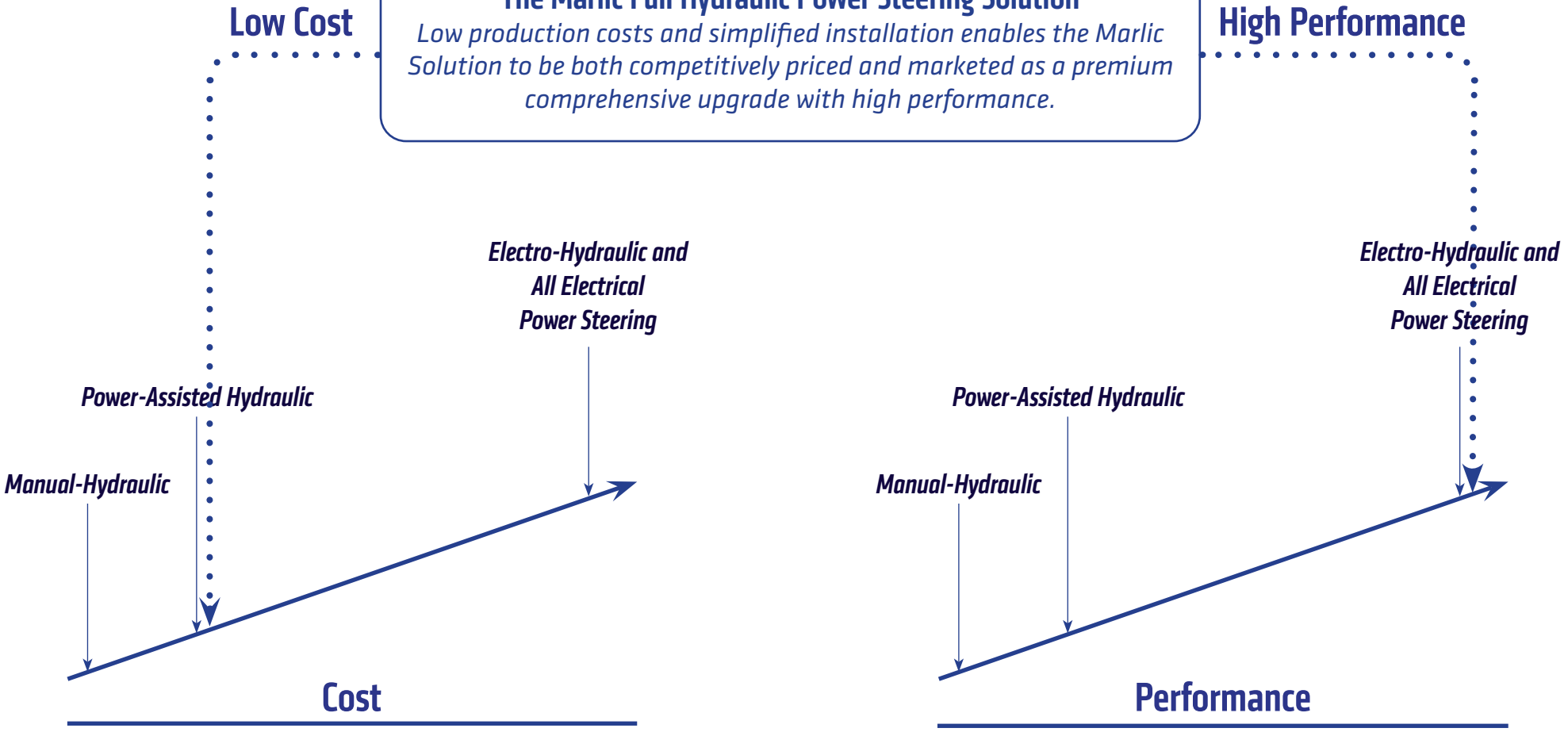
Cost vs Performance

The Marlic Full Hydraulic Power Steering Solution

Low production costs and simplified installation enables the Marlic Solution to be both competitively priced and marketed as a premium comprehensive upgrade with high performance.



Why go All Electric...

when you can go Full Hydraulic with Marlic?

All Electrical Power Steering

- ✗ *High power consumption*
- ✗ *Large battery pack requirement*
- ✗ *Inferior energy-to-force ratio*
- ✗ *Significant investment required*
- ✗ *Low overall sustainabilty*
- ✗ *Minimal safety - all steering relies on electricity*
- ☑ *Plug-and-Play for direct Autopilot control*
- ☑ *Simplified installation*

Marlic Full Hydraulic Power Steering

- ☑ *Low power consumption*
- ☑ *Minimal battery pack requirement*
- ☑ *Superior energy-to-force ratio*
- ☑ *Cost-effective solution*
- ☑ *More sustainable solution on several levels*
- ☑ *Safe helm steering - no electricity required*
- ☑ *Plug-and-Play for direct Autopilot control*
- ☑ *Simplified installation with integrated design*

At present, these statements have not been validated through formal testing or third-party evaluation, but are based on logical engineering reasoning.

Summary

By integrating the control module, steering cylinder and rudder position sensor into **one simplified steering unit**, we **eliminate the need for complex and costly installations**.

Superior performance – **Full hydraulic power steering, both at the helm and for electronic steering features,** utilizing optimal hydraulic power from belt-driven pump to enable effortless and precise control with increased safety.

Seamlessly integrated electronic steering features for 3rd party autopilot and joystick control plus integrated rudder position sensor, makes it **a true "plug and play" unit for both OEM and aftermarket**.

The Marlic 3520 model is a **direct fit, drop-in replacement for Mercury Mercruiser Stern Drives**, fitting directly onto the inner transom plate without the need for costly modifications.

Scalable technology to fit any application - for both inboard and outboard engines.

Competitively priced, but also positioned as a premium comprehensive upgrade.

Sku Consolidation – fewer parts to manage and warehouse.

Increased Sustainabilty - should be the future of power steering in Recreational Boating.