RIDE & HANDLING

MARINE STEERING, CONTROLS & FUEL SOLUTIONS

DOMETIC OUTDOOR


ELECT
STEE

RONIC RING

OPTIMUS ELECTRIC STEERING ACTUATOR

THE FIRST ALL ELECTRIC STEERING ACTUATOR FOR OUTBOARDS

The Optimus Electric Steering Actuator mounts directly on the outboard in place of the present hydraulic cylinder. The powerful drive train, position sensor, brake and electronics are all embedded in the electric steering actuator. This means no Pump Control Module, no hydraulic pump, no hoses, hydraulic cylinders and fluid, and no more purging the system.

The first all electric steering actuator will be compatible with Optimus 360 Joystick Control as well as SeaStation (GPS Anchor) and SeaWays (built-in autopilot).

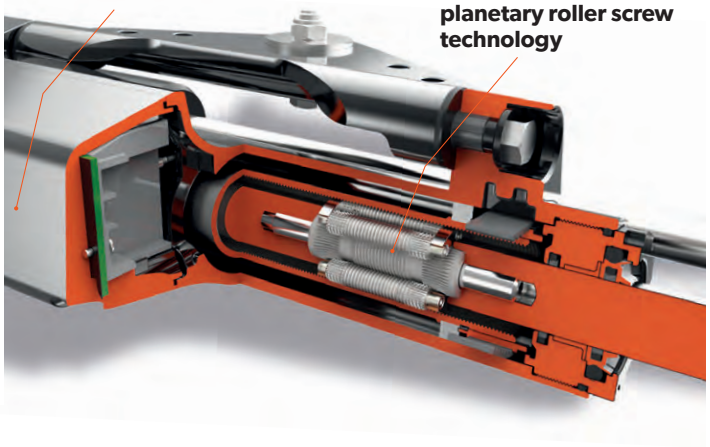
NEXT GENERATION ALL ELECTRIC POWER STEERING

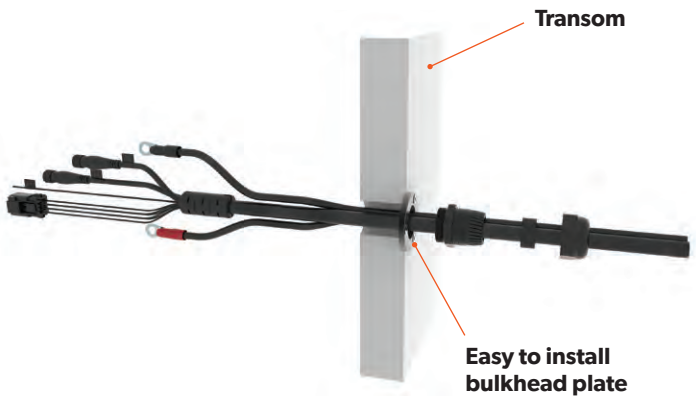
The Optimus Electronic Steering Actuator is the first complete bolt on electronic steering for outboard engines, compatible for twin, triple and quad engines 150 horsepower and up.

The steering control unit, communication and actuator are integrated into one electro-mechanical actuator, making this the next evolution in electronic power steering.

Features:

- First all electric remote mount steering actuator for outboard engines
- Integrated Electronics
  - The steering control unit is a fully potted assembly of electronics that is integrated directly to the electric actuator
- Compact and High Performance
  - Direct connect to electronic helms and joysticks
- Superior Steering for Power Boats





Easy Installation
Customer installable molded harness

Worry-Free Compatibility
Compatible with Optimus 360 Joystick Control as well as SeaStation (GPS Anchor) and SeaWays (built-in autopilot)

Durable Design
Ultra corrosion-resistant shafts

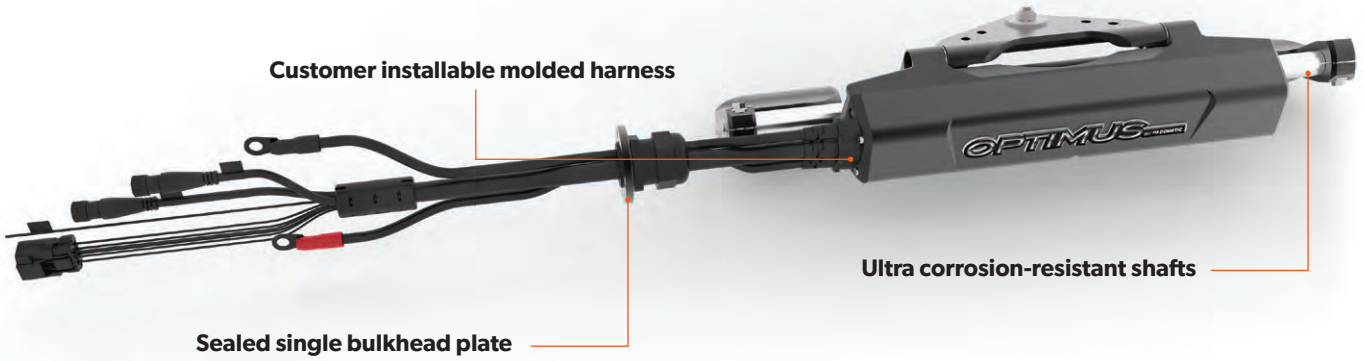
ADVANTAGES OF OPTIMUS ELECTRIC STEERING ACTUATOR

- Compatible with Optimus Helm, CANtrak display, and Joystick
- Similar in size to the tournament Optimus cylinder
- Compatible with drive by wire autopilot systems from Garmin, SIMRAD & Raymarine
- Adjustable speed sensitive turns lock to lock
- Adjustable speed sensitive wheel effort
- Ackerman steering (ideal for pontoon and catamarans)
- Speed sensitive rudder angle limits for safe vessel steering
- Longest life, compact planetary roller screw
- Wear resistant end glands and shaft scrapers that are triple sealing
- Proven corrosion resistant coatings on aluminum parts
- Compact brushless DC motor for demanding applications
- Innovative sealed single bulkhead plate houses all the harnesses
- Compatible with NMEA 2000
- NMMA, ABYC, CE, ISO and SAE electrical & environmental requirements

Maintenance
- Drastically reduced maintenance, no hydraulic fluid required
- Harness is a stand alone replacement item

Manual Override
- Loosen the 2x support bracket pinch bolts and rotate the cylinder shaft to center engine(s) with the supplied wrench via the external hex on the port side shaft

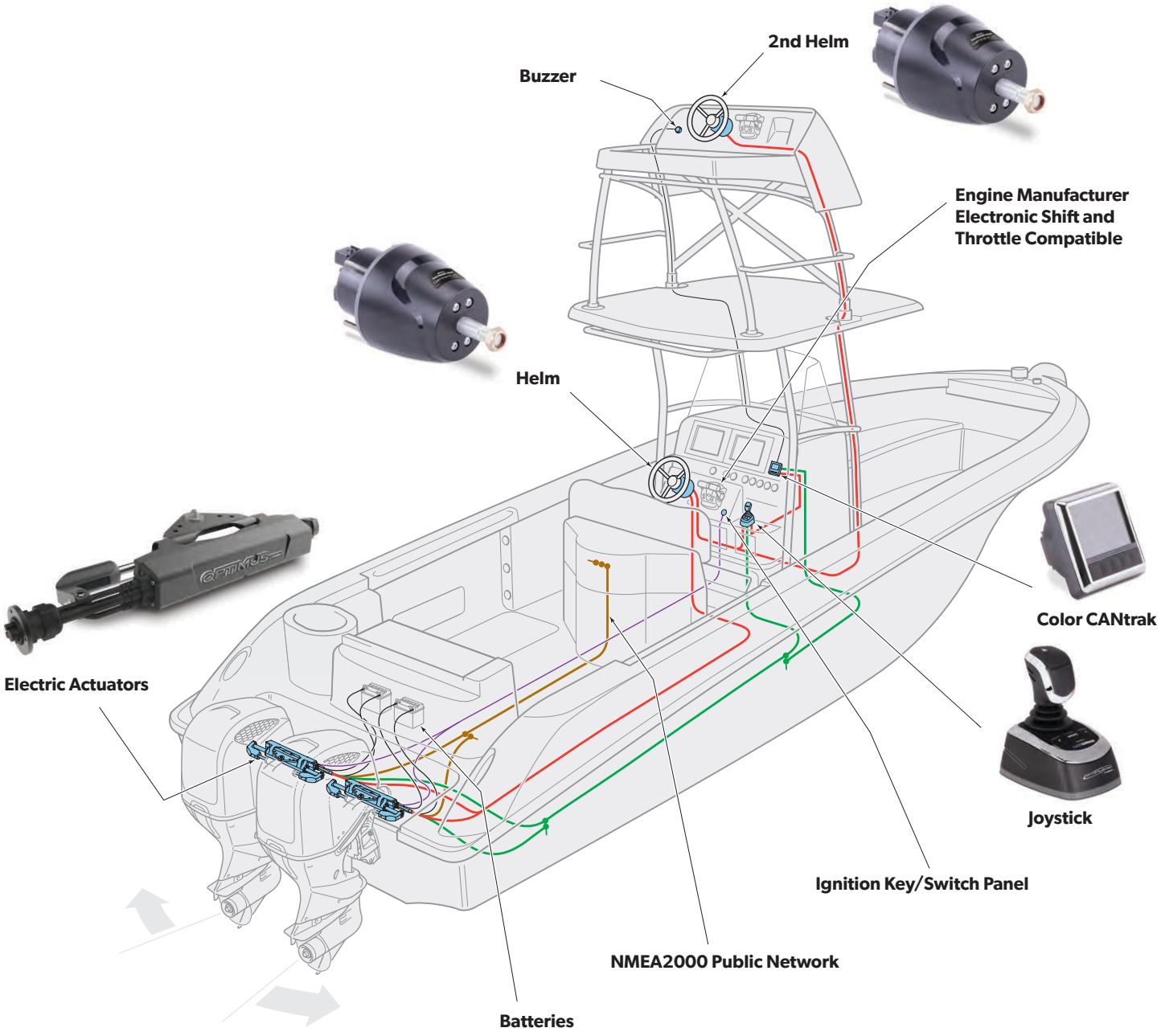
Simple To Install
- Directly connect to electronic helms and joysticks
- Potential to remove 16 holes that would be drilled for bulkhead plates if harnesses are routed using the integrated single bulkhead plate
- CAN harness available in 12' and 18' lengths
  - Harness lengths 12' for the battery
- Only three 3 CANbus connections, positive and negative battery and system wake-up
- Less space and weight compared to Optimus electro-hydraulic system
- No oil purge



180 ° Harness Option Available

INSTALLATION - ELECTRIC STEERING ACTUATOR & JOYSTICK SYSTEM

System Schematic - Twin Engine, 2nd Station



For reference only and subject to change.

APPLICATIONS FOR OPTIMUS ELECTRIC STEERING

Compatibility Information

Popular engine brands: Yamaha®, Suzuki®, BRP® (Evinrude®), Mercury®, Honda®

	POPULAR ENGINE BRANDS (MST)	YAMAHA® EST (NON 425)	YAMAHA® EX (NON 425)	MERCURY® VERADO™ (L6)	SUZUKI® SPC1	SUZUKI® SPC2	OXE DIESEL	COX MARINE	HONDA IST (2)	MERCURY® V6 (CMS)	MERCURY® V8 (CMS)
Optimus EPS											
Single Engine	•	•	•	NA	•	•	NA	NA	•	•	•
Twin Engine	•	•	•	NA	•	•	NA	NA	•	•	•
Triple Engine	•	•	•	NA	•	•	NA	NA	NA	•	•
Quad Engine	•	•	•	NA	•	•	NA	NA	NA	•	•
Optimus 360 Joystick											
Twin Engine	•	•	•	NA	•	•	NA	NA	•	• ***	NA
Triple Engine	NA	•	•	NA	•	•	NA	NA	NA	NA	NA
Quad Engine	NA	•	NA	NA	•	•	NA	NA	NA	NA	NA
JS Upgrade	•	•	• 1	NA	•	•	NA	NA	•	NA	NA

- 1 Twin and Triple Only
- 2 Honda iST control only (current iST control)
- *** Available from Mercury®
- Please check Optimus BOM tool for Optimus Joystick & Mercury® Electronic Control Compatibility
- NA - Currently not available, please contact sales representative
- MST - Mechanical Shift and Throttle Engines
- EST - Electronic Shift and Throttle Engines
- JS Upgrade - Can add joystick control to an existing Optimus EPS vessel
- Optimus 360 is not compatible with Mercury® Next Gen Control System

* Information is subject to change.


OPTIMUS EPS
SPECIFICALLY DESIGNED FOR BASS BOATS

THE BEST STEERING SYSTEM FOR BASS BOATS

Dometic has taken the Optimus electric steering actuator and tuned it specifically for BASS boats to get the following steering performance. Dometic spent countless hours working with BASS boat builders to develop the BEST steering system for this segment

Specifications

Environmental

- Steering System Weight
  - Helm 4 lbs, Cylinder 17 lbs, harness 8 lbs, display 1 lb
  - Total 30 lbs
- Current draw
  - Low speed 4 amps average
  - Medium speed 8 amps average
  - High speed 12 amps average
- Speed 3.5 turns LTL:
  - 30 degrees a second: center to hard over 1 second
- Reaction time at load
  - 100 Milli seconds from movement at helm to movement at cylinder
- Running Dead Band
  - 1 degrees
- Symmetric Helm Feel
  - Yes

Running Backlash

- 0 degrees

- Servicing
  - Annual greasing of support rod and brackets

Features

- The electric steering system removes all hydraulic steering fluid from the boat (No bleeding).
- Simpler & Faster installation with fewer splash well perforations
- Number of turns default set to 3.5 no variation due to load
- Faster steering response with no load dependent variation
- Higher precision control which means no steering creep
- Higher position holding power against back driving load
- Programed helm resistance for highspeed steering wheel stability
- Symmetric helm feel when turning to port or starboard
- Steering response time and speed is much quicker with little effort
- Very low free play at steering wheel – helps control chime walk

ENGINE MANUFACTURER	MODEL	BASS BOAT ACTUATOR
Yamaha®	VF150-VF250 SHO	EA1300
Mercury®	All 150 ProXS-250 ProXS	EA1300
Suzuki®	DF250SSTL	EA1400

- Single Only
- Please check Optimus BOM tool for more details

* Information is subject to change.

The CANtrak color display is required unless the following Garmin screens are fitted:

- GSPMAP® 74xx/7600
- GSPMAP® 7x2/9x2 & 12x2
- GSPMAP® 10 x2/12x2 (Keyed)
- GSPMAP® 8400/8600
- GSPMAP® 7x2/9x2 & 12x2 Plus
- GSPMAP® 8700 Black Box
- Yamaha CL7

OPTIMUS 360

JOYSTICK CONTROL SYSTEM

Optimus 360 gives your boat a whole new dimension of control. By developing the joystick function to be intuitive, Optimus 360 allows you to move your boat not only forward and back, but also sideways, by pushing the joystick to the left, or to the right, and even, rotate on a dime, all with a simple twist of the joystick.

Optimus 360 is designed for low speed maneuvering, and really excels in the marina, when pulling in and out of your slip, or when docking. Intelligent programming minimizes the amount of shifting required to complete a maneuver.

With progressive throttling, the joystick becomes a natural extension of your hand. A light push on the joystick provides minimal thrust while more thrust can be applied by pushing harder on the joystick. The boost mode increases the RPM to give you more thrust when needed.

THERE'S NOTHING IT CAN'T DO!

Optimus 360 steering/shift/throttle control system is engineered for powerboats with electronic shift and throttle engines, allowing you to use the existing electronic controls.

Optimus 360 connects to the existing control head with closed loop processing, providing a very seamless integration.

Each component has been designed to complement the other, resulting in a seamless experience of steering control in virtually every situation on the water. The high level of engineering also extends to the reliability of the system, with quality materials, careful manufacturing and redundant systems, all to stand up to the rigors of life on the water.

Features:

- Intuitive high precision Joystick docking with confidence
- Seamless integration with electronic controlled engines
- Autopilot ready - just a simple connection
- Dual station compatible
- Tiebar engines (triple/quad) – less components, simple installation, less cost
- Available as a retrofit or for new engine installation
- All the benefits of Optimus EPS, including auto adjusting steering effort and steering turns lock to lock

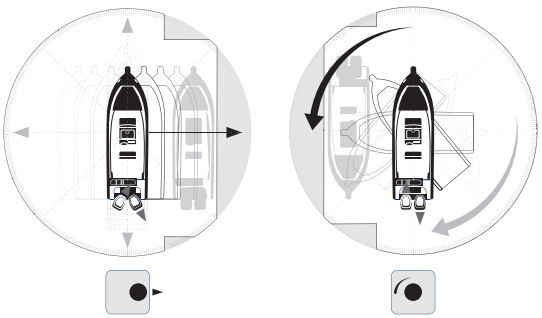
Intuitive
Boost and Take Command Modes

Easy To Use
Designed for everyone

Attractive
3 axis joystick with guided feel

Applications for Optimus 360

- Most twin, triple and quad engine outboard boats - electronic and mechanical controlled (twin only)
- Single and twin helm station yachts
- High performance powerboats, saltwater fishing vessels, RIBS, catamarans, houseboats and pontoon boats



SPECIFICATIONS

Electrical
- Operating voltage: 9-16 VDC [SAE J1455]
- Dual CAN bus
  - CAN bus 1: High Speed CAN 250 kbps [SAE J1939]
  - CAN bus 2: Fault Tolerance CAN 125 kbps [ISO 11898-3]
- Protected from reverse polarity, power interruption.
- Power transient protection: Switching transient, starter motor disturbance, and load dump. [SAE J1113-11]
- Conducted Immunity: 10 Vrms, Criteria A [IEC 60945]
- Radiated Immunity: 10 V/m, Criteria A [IEC 60945]
- Electrostatic discharge protection: 6kV contact, 8 kV air [IACS E10]
- Compass safe distance: 50 cm, at 1° deflection [IEC 60945]

Mechanical For X, Y Axes
- Mechanical angle of movement: +/- (18° +/- 2°)
- Actuator force: 1.0 +/- 0.2 lbf
- Typical current drawn: Less than 300mA
- Square limiting plate
- Guided feel for primary X, Y directions
- Durability: Minimum 500,000 cycles

Mechanical For Z Axis
- Mechanical angle of movement: +/- 40 degree

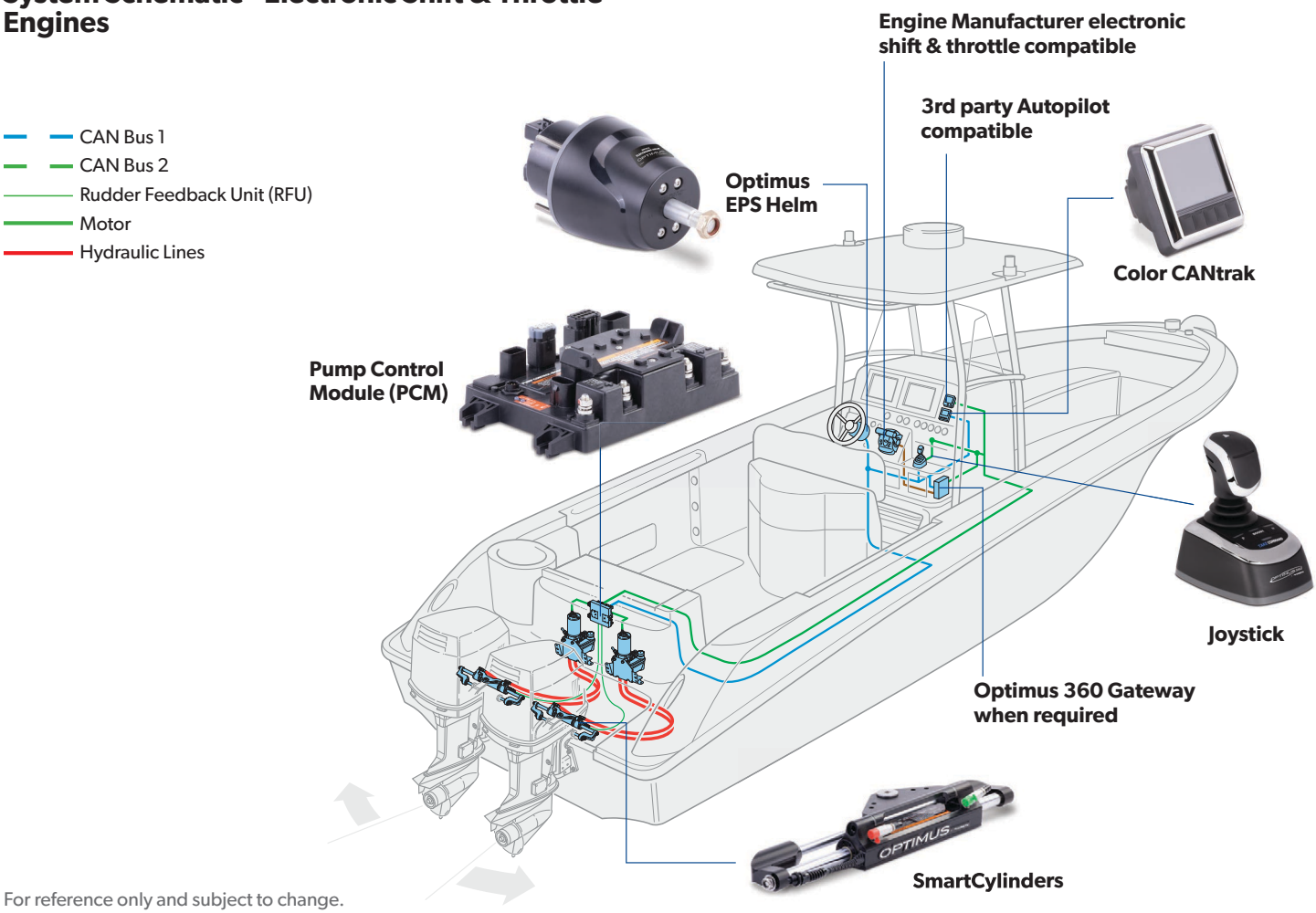
Connection
- 2 x 6-Pin male, FCI Apex-2.8 connectors
- Built in CAN network tee for multi-station connection
- Connector tensile pull resistance: 60 lbf [ISO 10133]

Environmental
- Operating temperature: -18°C to +77°C [ISO 25197]
- Storage temperature: -40°C to +85°C [ISO 25197]
- Corrosion resistance: 1000 hours salt spay [ASTM B117]
- Water ingress protection: IPX7 [IEC 60529]

Shock & Vibration
- Random vibration: 0.0284 g^2/Hz [ABYC P-27]
- Resonant vibration: 4 G zero-peak, 20-2000 Hz [ABYC P-27]
- Thermal shock: 100 cycles
- Mechanical shock: 50 G, 11 msec half-sine shape [ISO 25197]

INSTALLATION - OPTIMUS 360 JOYSTICK

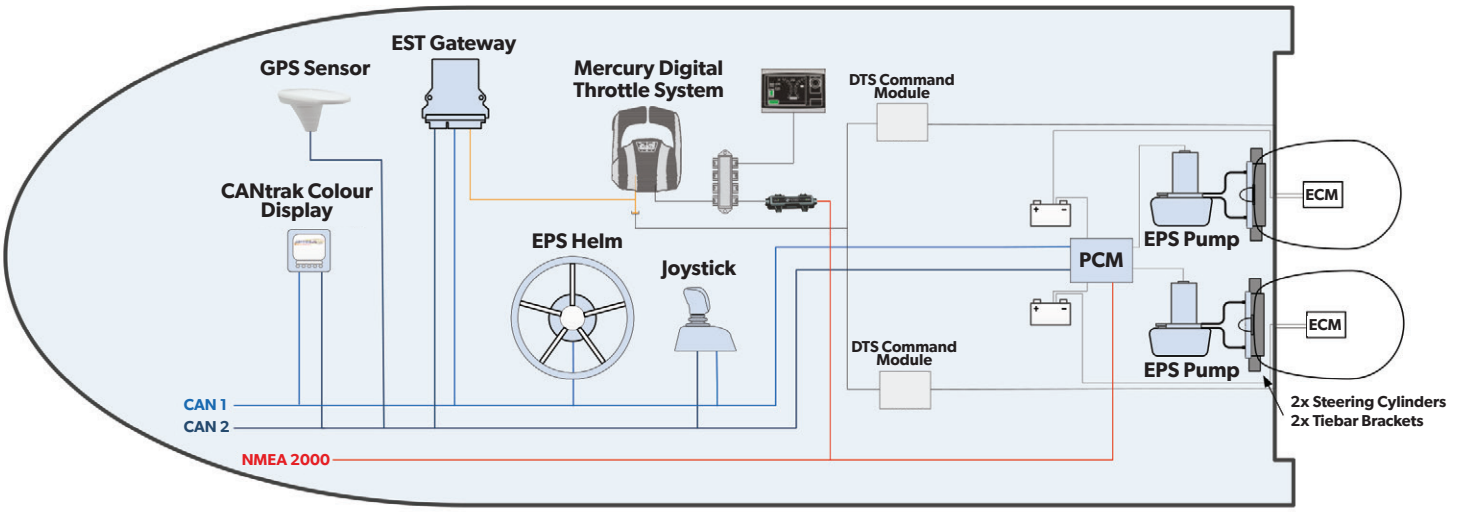
System Schematic - Electronic Shift & Throttle Engines



For reference only and subject to change.

INSTALLATION - OPTIMUS 360 JOYSTICK

System Schematic - For Mercury® Verado™ 6 Cylinder Engines



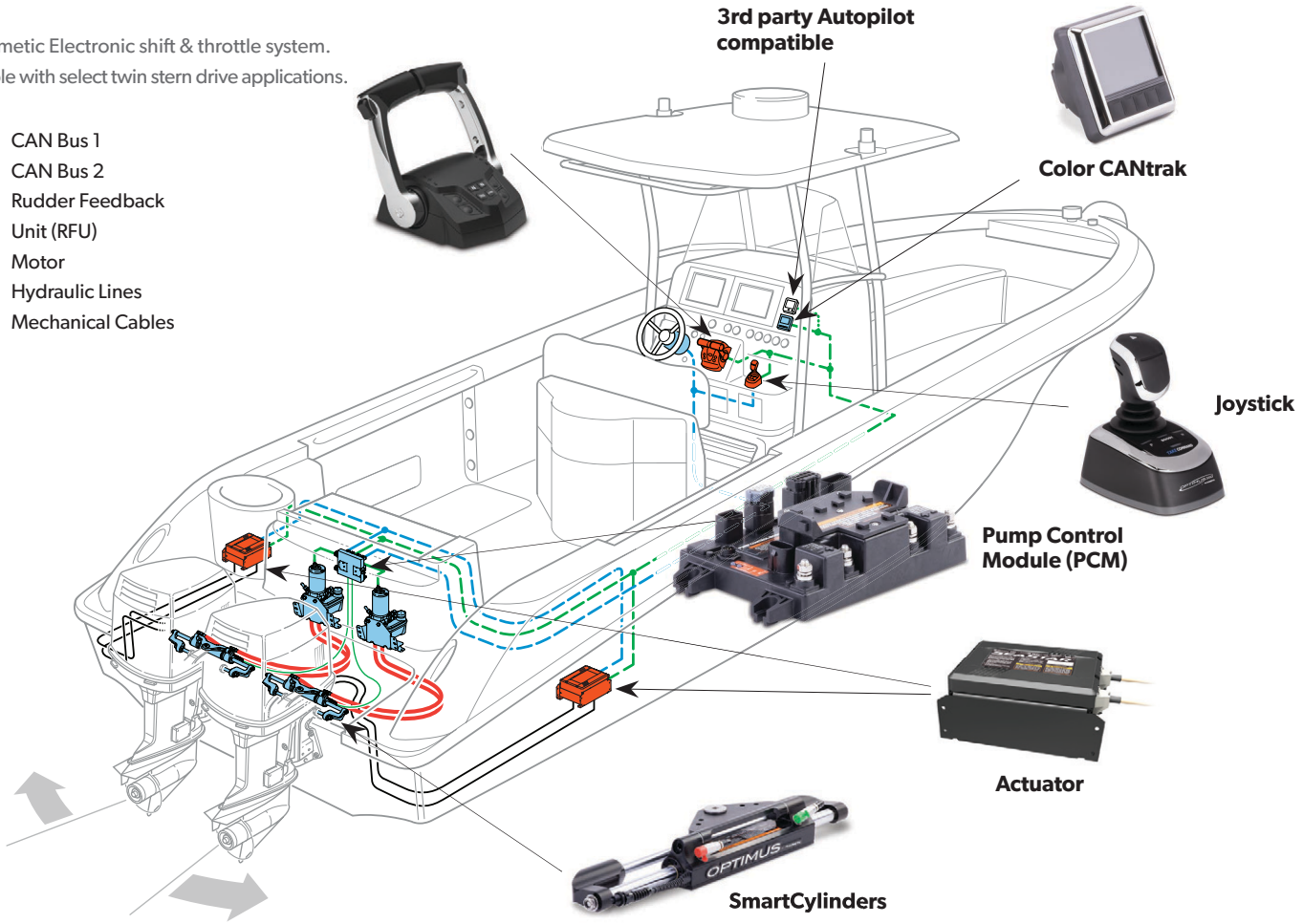
For reference only and subject to change.

INSTALLATION - OPTIMUS 360 JOYSTICK

System Schematic - Mechanical Shift & Throttle Engines

Using Dometic Electronic shift & throttle system.
Compatible with select twin stern drive applications.

- CAN Bus 1
- CAN Bus 2
- Rudder Feedback Unit (RFU)
- Motor
- Hydraulic Lines
- Mechanical Cables



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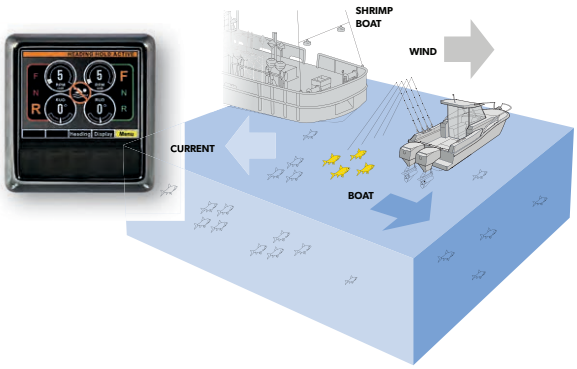
SEASTATION
HOLDS POSITION & HEADING VIA GPS
SPORTSMAN

EASY ADD-ON TO YOUR OPTIMUS 360 BOAT

When you are trying to locate that ideal spot over a reef or a wreck, SeaStation is ideal. Just hold your position and heading, drop your lines and see if you have success, if not, simply move to another location and engage SeaStation. No physical anchor required.

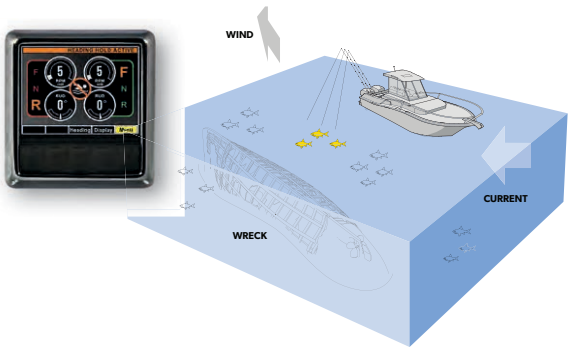
Dometic has applied the same smart algorithms to SeaStation as you have experienced with Optimus 360 joystick control to reduce unnecessary shifting and jockeying of the engines while providing superior position and heading functions for a large selection of engine platforms.

Captains have told us that we can't have the jarring from the engines shifting and unnecessary movement as it does not sound good and also could impact the fishing outcome. We took this input seriously and we are confident SeaStation will be a fishing enabler.



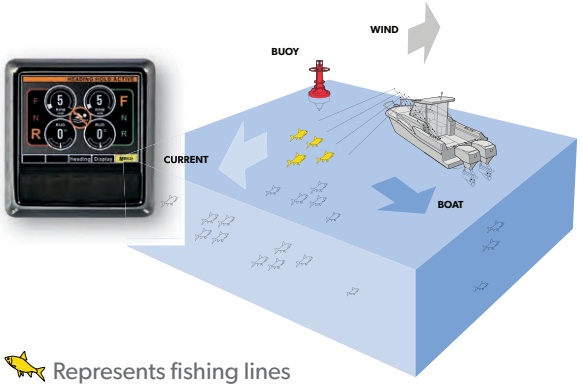
Mode 1: Heading Hold

Hold heading regardless of position.
Applications include kite fishing/drift fishing.
Easier setup - Maximize fishing time.



Mode 2: Position Hold

Hold position regardless of heading.
Applications include bait fishing and wreck/reef fishing. Finding the natural heading when in position hold could be the best option.



Mode 3: Heading and Position Hold

Stay in position and hold heading.
Applications include waiting for a bridge to open, a spot at the dock to become available and bait fishing near a structure.

Represents fishing lines

SYSTEM REQUIREMENTS

OPTIMUS 360 JOYSTICK CONTROL SYSTEM

SeaStation Kits EPSK1625 & EPSK1630

Includes: Dual antenna GPS sensor
DeviceNet CAN2 harness and T-connector
Software and sensor license activation code
Warning decals are provided to be placed near all boarding access points

Accuracy (target) ± 3 Meters Position hold
± 10° Heading hold

Sensor and mounting information:
Dimensions without mount: 25.9 L x 12.9 W x 4.5 H (cm)
10.2 L x 5.1 W x 1.8 H (in)
with mount: 25.9 L x 12.9 W x 12.8 H (cm)
10.2 L x 5.1 W x 5.0 H (in)

Weight without mount: 0.42 kg (0.9 lb)
with mount: 0.51 kg (1.1 lb)

SeaStation Kits
EPSK1625 - SeaStation compass sensor core pack pole mount
EPSK1630 - SeaStation compass sensor core pack surface mount

SeaStation Modes

This is a safety step to make sure that all precautions have been taken to make sure there is nothing in the water when SeaStation is engaged. After pressing the A and C buttons on the joystick, the captain will be prompted to engage SeaStation by pushing the button on the CANtrak display.

A - Position
C - Heading

Heading Adjustment

Jog buttons have been created to adjust heading in five degree increments.

This feature allows heading adjustment without disengaging SeaStation to align the vessel stern to wind and current to reduce engine activity.

Another common use for SeaStation will be when you are waiting for a spot to open at the dock or waiting for a bridge to lift. Simply push the A button or A&C buttons on the joystick, acknowledge via the Color CANtrak display and the boat will hold its position.

When ready to take command, simply toggle the A and/or C button off for control with the joystick.

As Dometic adds more functions and features to SeaStation they will be available with s/w updates. Please contact your OEM or Optimus Certified dealer for more information.

WARNING: THIS IS NOT TO BE USED FOR ANY KIND OF SWIMMING AND DIVING.

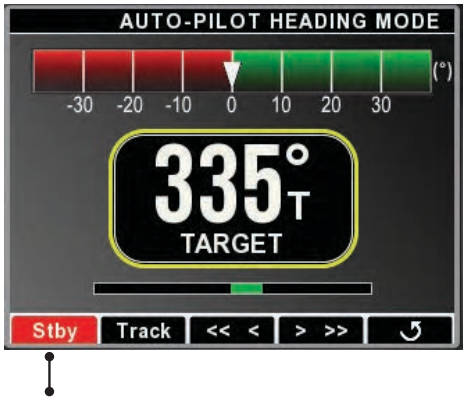

SEAWAYS
AUTOPILOT WITH THE OPTIMUS 360 SYSTEM
DOMETIC

SET YOUR DESTINATION AND GO!

SeaWays autopilot is a simple enhancement (update) to the Optimus 360 system using the CANtrak display and can use the same heading and position sensor as SeaStation.

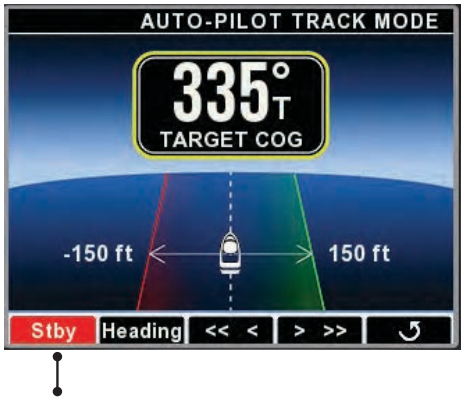
Features:

- SeaWays is included with SeaStation and is accessible using the CANtrak display that is part of the Optimus 360 system
- The display image is simple, making it easy to engage one of the 3 modes and understand what the boat is doing
- Track mode will compensate for wind and current keeping the boat on course
- Uses GPS-compass technology
- Heading not affected by boat roll and pitch
- Always provides true north
- Now you have SeaStation (GPS anchor) and Autopilot all in one System from Dometic



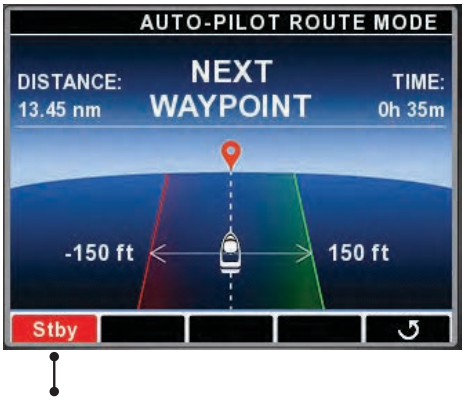
Heading Mode

Autopilot holds a desired heading. Boat may drift with wind and current



Track Mode

Autopilot holds a desired course over ground. Boat heading may be changed by the autopilot to hold the desired course



Route Mode

Autopilot follows waypoints provided by third party chart plotter. Boat heading will be changed by the autopilot to follow the waypoints

Override

Autopilot is temporarily disabled when the helm is turned. The autopilot re-engages automatically when the helm is no longer turned and the boat heading is stable. When the autopilot re-engages, the current heading becomes the new desired heading.

What Makes SeaWays Autopilot Simple?

- No additional Course Control Unit (CCU) or display to install
- The autopilot CCU resides inside the steering controller (PCM) and has access to all the steering characteristics for optimum performance
- All the steering commands are sent internally providing a more integrated system, unlike 3rd party autopilot systems where communication is external
- Tuning is simple as all SeaWays has to do is determine how the boat responds to the rudder, providing accurate autopilot performance

Easy Heading Change

Instead of changing your heading via the CANtrak display, you can easily change your heading by tapping the joystick to get 1 degree or 10 degree changes in heading.

Tap the joystick port or starboard for 1 degree change or hold it for 2 seconds for 10 degree change.

The SeaWays autopilot Heading and Track modes can be activated via the CANtrak display. If you desire Route Mode, a third party chartplotter is required for setting the waypoints.

SEAWAYS GO AUTOPILOT

Affordable point and GO autopilot that is easy to install.

COST EFFECTIVE
NO NEED FOR ADDITIONAL PUMPS

EASY TO USE
POINT AND GO

COMPATIBILITY
OPTIMUS EPS OUTBOARD STEERING

Applications:

- Single or multi-engine Optimus EPS outboard vessels
- Affordable point and GO autopilot system
- Display heading information on compatible multi-functional displays (MFD)
- Holds magnetic heading only

Autopilot for Optimus EPS

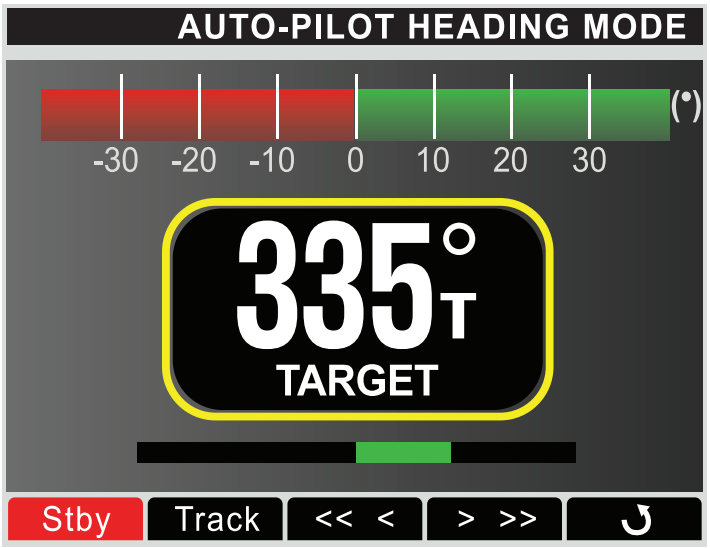
- Kit contains a 15' harness, tee connector, mounting hardware, install/ operators manual
- Connects to either CAN2 (private CAN) or CAN3 (public CAN)
- SeaWays GO requires a license code activation that is entered via the Optimus CANtrak display
- Simple single step calibration

Dometic Innovation

- Smart algorithms are used to prevent constant correction and movement to provide a smoother more comfortable journey
- Takes advantage of the components that make up the Optimus EPS system, resulting in no additional parts
- Designed to work with both Optimus electro-hydraulic and electric outboard steering systems

Specifications

DOMETIC MODEL	EPSK1700
Supply Voltage	8-16 VDC
Operating Temperature	-25C to 65C
Approvals Compliance	CE under EMC directive 2014/30/EU
Warranty	2 Years
Waterproof Rating	IPx7
Technology	Solid State, 9 Axis Sensor



CANtrak display

A HIGHER LEVEL OF ENGINEERING SOPHISTICATION

For centuries, people have been steering boats by brute force. While cable steering, and more recently hydraulics, have made steering easier, the prime mover is still the arms and hands of the captain at the wheel. But all of that has changed. Dometic revolutionizes boat handling with Optimus Electronic Power Steering (EPS) for single, twin, triple and quad outboard engine boats. With Optimus EPS, you can take command of your boat without having to arm-wrestle for control.

Optimus EPS truly raises the bar when it comes to comfort, control and maneuverability, especially for the new breed of high performance powerboats, saltwater fishing vessels, catamarans, RIBS and high end pontoon boats. It's unlike anything you've ever experienced when it comes to steering. We know you will be impressed.

Take things a step further and give your boat a whole new dimension of control. By developing the joystick function to be intuitive, Optimus 360 allows you to move your boat not only forward and back, but also sideways, by pushing the joystick to the left, or to the right, and even, rotate on a dime, all with a simple twist of the joystick.

THE TECHNOLOGY BEHIND THE SYSTEM

The incredible feel you get when you're behind the wheel of a boat equipped with Optimus EPS is the result of an innovative array of technology and engineering. Each component has been designed to complement the other, resulting in a seamless experience of steering control in virtually every situation on the water. The high level of engineering also extends to the reliability of the system, with quality materials, careful manufacturing and redundant systems, all to stand up to the rigors of life on the water.

System Components:

Electronic Helm

Key Benefits
- Adjustable steering for maximum comfort
- Driver comfort, control and performance as speed varies
- Provides redundancy for reliable operation
- No hydraulic oil at helm
- Adjustable position of steering wheel for personal comfort

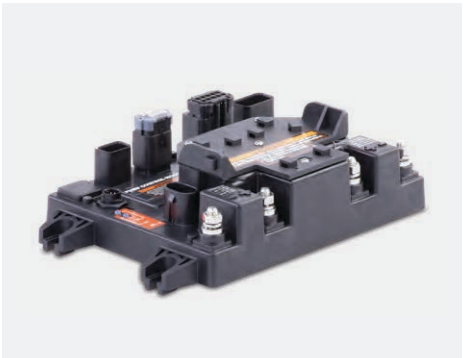
SmartCylinder

Key Benefits
- System reliability and operation
- No additional RFU required for autopilot system
- Fits most outboard engines

Hydraulic Steering Pump

Key Benefits
- Significantly reduces overall power consumption
- No oil cooler required for hydraulic fluid
- Allows user to purge system with existing components
- Meets Coast Guard requirement for ignition protection
- A separate auto-pilot pump is not required
- Limp home mode on remaining functional engine(s)

Pump Control Module



Key Benefits
- Ensures system reliability and operation
- Ensures reliable cable protection from vibration
- No additional autopilot pump and RFU
- Ensures system operates at peak performance

CanTrak Display

Key Benefits
- Interface to setup steering and joystick system
- Installer adjustable steering settings
- Real-time system status rudder direction and RPM
- No additional device or computer required to get the system functional
- Interface to activate both SeaStation and SeaWays

*System components can differ in appearance depending on engine application.

APPLICATIONS FOR OPTIMUS EPS

Outboard Applications

All single, twin, triple and quad outboard engine boats

- Electronic and mechanical controlled
- Single and multi-helm station boats
- Performance powerboats, bay boats, center console, saltwater fishing vessels, RIBS, catamarans, houseboats and pontoon boats

Inboard Applications (40-100'+)

Most single and twin inboard engine boats – electronic and mechanical controlled

- Single, twin and triple helm station yachts
- Performance motor yachts, express convertibles, and sport yachts

Inboard & Sterndrive Applications (Under 40')

Most single and twin inboard engine boats – electronic and mechanical controlled

- Single, twin and triple helm station yachts
- Competition ski boats, cruisers, and sport fishing yachts

Compatibility Information

Popular engine brands: Yamaha®, Suzuki®, BRP® (Evinrude®), Mercury®, Honda®

	POPULAR ENGINE BRANDS (MST)	YAMAHA® EST (NON 425)	YAMAHA® EX (NON 425)	MERCURY® VERADO™ (L6)	SUZUKI® SPC1	SUZUKI® SPC2	OXE DIESEL	COX MARINE	HONDA iST (2)	MERCURY® V6 (CMS)	MERCURY® V8 (CMS)
Optimus EPS											
Single Engine	•	•	•	•	•	•	•	•	•	•	•
Twin Engine	•	•	•	•	•	•	•	•	•	•	•
Triple Engine	•	•	•	•	•	•	NA	NA	•	•	•
Quad Engine	•	•	•	•	•	•	NA	NA	•	•	•
Optimus 360 Joystick											
Twin Engine	•	•	•	•	•	•	•	NA	•	• ***	NA
Triple Engine	NA	•	•	•	•	•	NA	NA	NA	NA	NA
Quad Engine	NA	•	NA	•	•	•	NA	NA	NA	NA	NA
JS Upgrade	•	•	• 1	•	•	•	•	NA	•	NA	NA

- 1 Twin and Triple Only
- 2 Honda iST control only (current iST control)
- *** Available from Mercury®
- Please check Optimus BOM tool for Optimus Joystick & Mercury® Electronic Control Compatibility
- NA - Currently not available, please contact sales representative
- MST - Mechanical Shift and Throttle Engines
- EST - Electronic Shift and Throttle Engines
- JS Upgrade - Can add joystick control to an existing Optimus EPS vessel
- Optimus 360 is not compatible with Mercury® Next Gen Control System

* Information is subject to change.

Advantages of Optimus EPS

- No oil at helm
- Boat that steers like a sports car
- Plug and play autopilot compatibility with drive by wire systems
- No autopilot pump or rudder feedback unit
- Adjustable speed sensitive wheel effort
- Adjustable speed sensitive turns lock to lock
- Can be retrofitted to existing mechanical controlled engines
- No tie-bars (twin configuration)
- No liquid tie-bar (CAT)
- On demand pumps which extend battery life
- Components based on existing Dometic reliability and quality
- NMEA 2000 Certified. Meets or exceeds NMMA, ABYC, CE, ISO, and SAE electrical & environmental requirements

Options for Optimus EPS

- Multi-station electronic helm
- Heavy-duty tournament cylinders
- Triple with tie-bar
- Quad with tie-bars

Specifications

Features & Benefits of the Optimus EPS System

- Optimus EPS is designed to be Optimus 360 ready
- ABYC, CE, ISO and SAE compliant - adheres to established safety standards
- Compatible with select autopilot models from Slimrad®, Garmin® and Raymarine®
- When adding 2nd or 3rd station helm, no oil, just electrical connection

Autopilot Interface

The Optimus EPS electronic control system interfaces directly with the latest generation of autopilots from Garmin®, Raymarine® and Simrad®, without the need for a second pump and the lengthy installation and purging procedure.

Redundancy

Optimus EPS has multiple levels of redundancy using a fault tolerant CAN network and each component has at least 2 sensors that are continually monitored.

Ackerman Steering

Intelligent programming allows the Optimus EPS system to separately control the steering angle of inner and outer outboards. This eliminates under-steer caused by the outside outboard "pushing" against the curve of the turn. Ackerman steering is especially important in power catamarans where the engines are located farther apart.

Active Sensitivity

Lock-to-lock turns and wheel effort are programmed to change with engine RPM. At slow speeds, Optimus EPS can be set to reduce the number of turns lock-to-lock, and make it easier to steer. When you're negotiating through traffic or in a tight spot, those smaller moves of the wheel give you precise control. When you're running at speed in open water, Optimus EPS can be set to increase lock-to-lock turns, for example, and increase steering effort giving the driver more stability to comfortably keep on course. And through it all, Optimus EPS does the work, so you can relax and take it easy.


OPTIMUS EPS
FOR OUTBOARD ENGINE APPLICATIONS
SEA PRO
SUZUKI

APPLICATIONS FOR OPTIMUS EPS

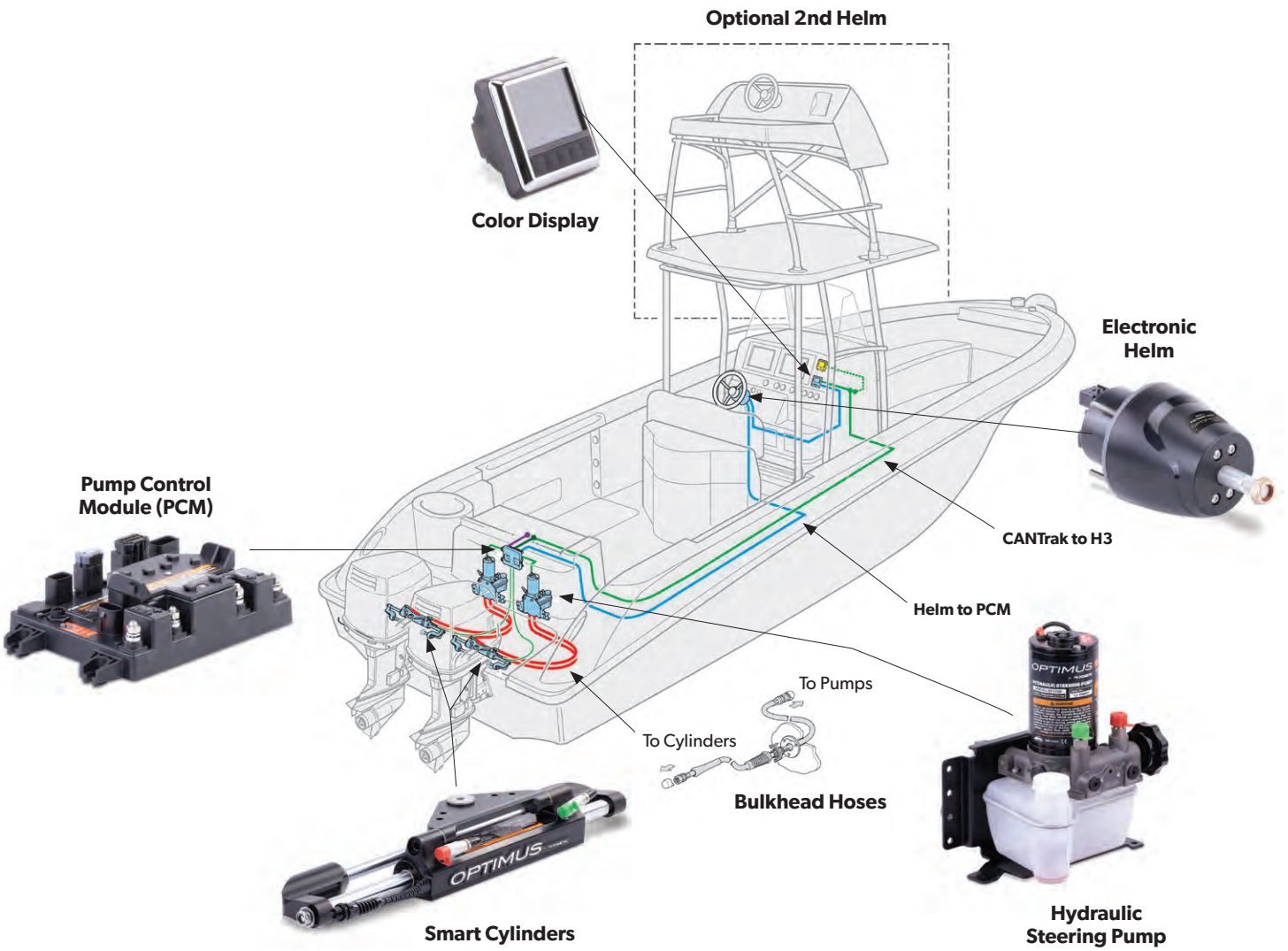
Outboard Applications

All single, twin, triple and quad outboard engine boats

- Electronic and mechanical controlled
- Single and multi-helm station boats
- Performance powerboats, bay boats, center console, saltwater fishing vessels, RIBS, catamarans, houseboats and pontoon boats

The Technology - Outboard Engines

System Components



*For reference only and subject to change.

OPTIMUS EPS FOR MERCURY® VERADO™ ENGINES

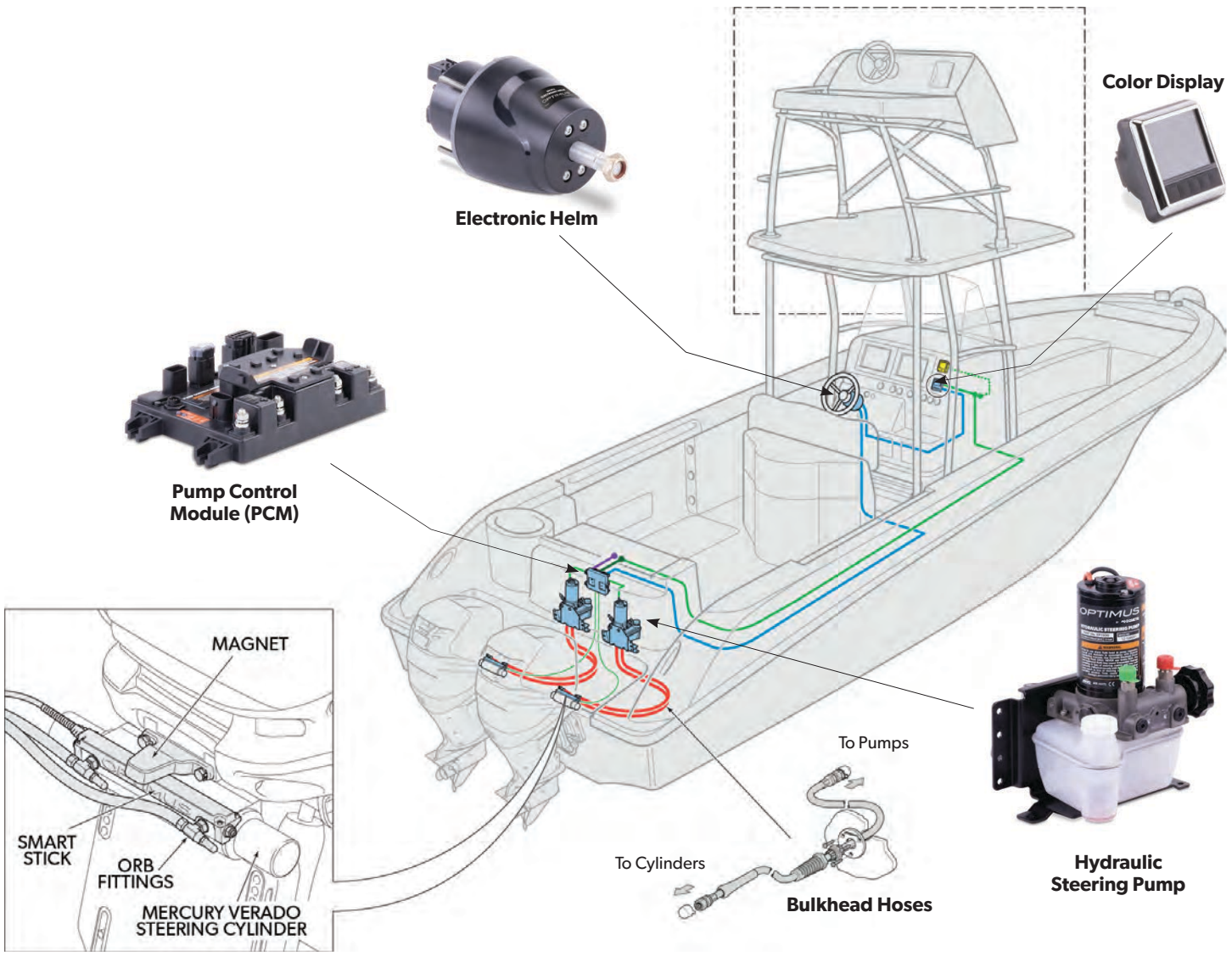
Challenges Hatch Innovation

The incredible feel you get when you are behind the wheel of a boat equipped with Optimus EPS can now steer Mercury® Verado™ engines. Dometic has creatively designed a custom molded smartstick and magnet assembly that adapts to the existing built-in Verado™ steering cylinder. The electronic helm, hydraulic steering pump, CANtrak display, and PCM are the same components you have grown to trust to steer your vessel over the past several years. Now you can get the comfort, steering performance and control you expect.

The biggest challenge was finding a creative way to adapt the smartstick and magnet components to provide the rudder reference signal without impacting the integrity of the Verado™ steering cylinder. This ingenuity in design adapts these components to the steering cylinder with the same level of redundancy available in all Optimus EPS systems.

INSTALLATION - OUTBOARD ENGINES

System Schematic Mercury® Verado™ Engines

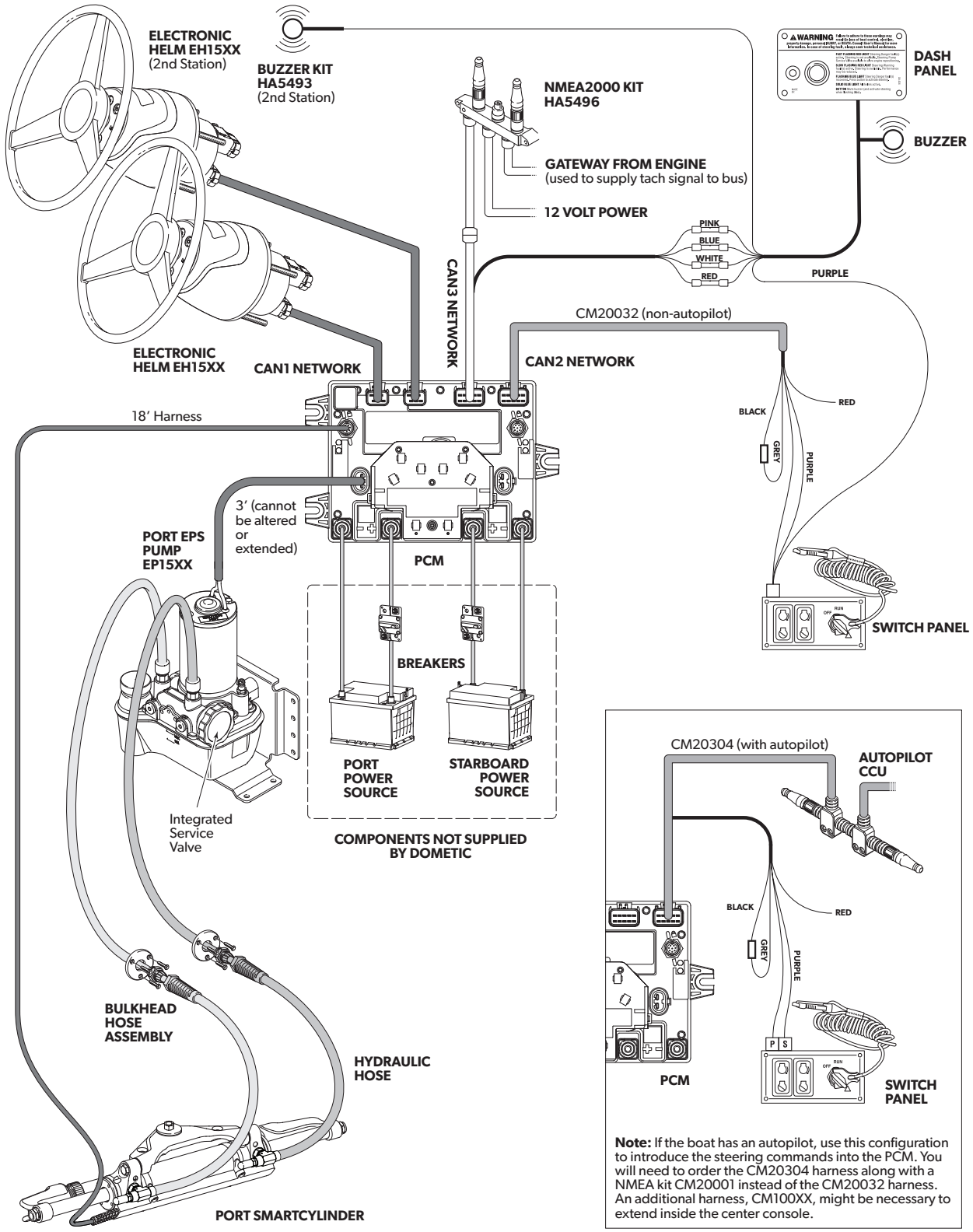


*For reference only and subject to change.

Components based on existing Dometic reliability and quality.

INSTALLATION - OUTBOARD ENGINES

System Schematic - Single Engine

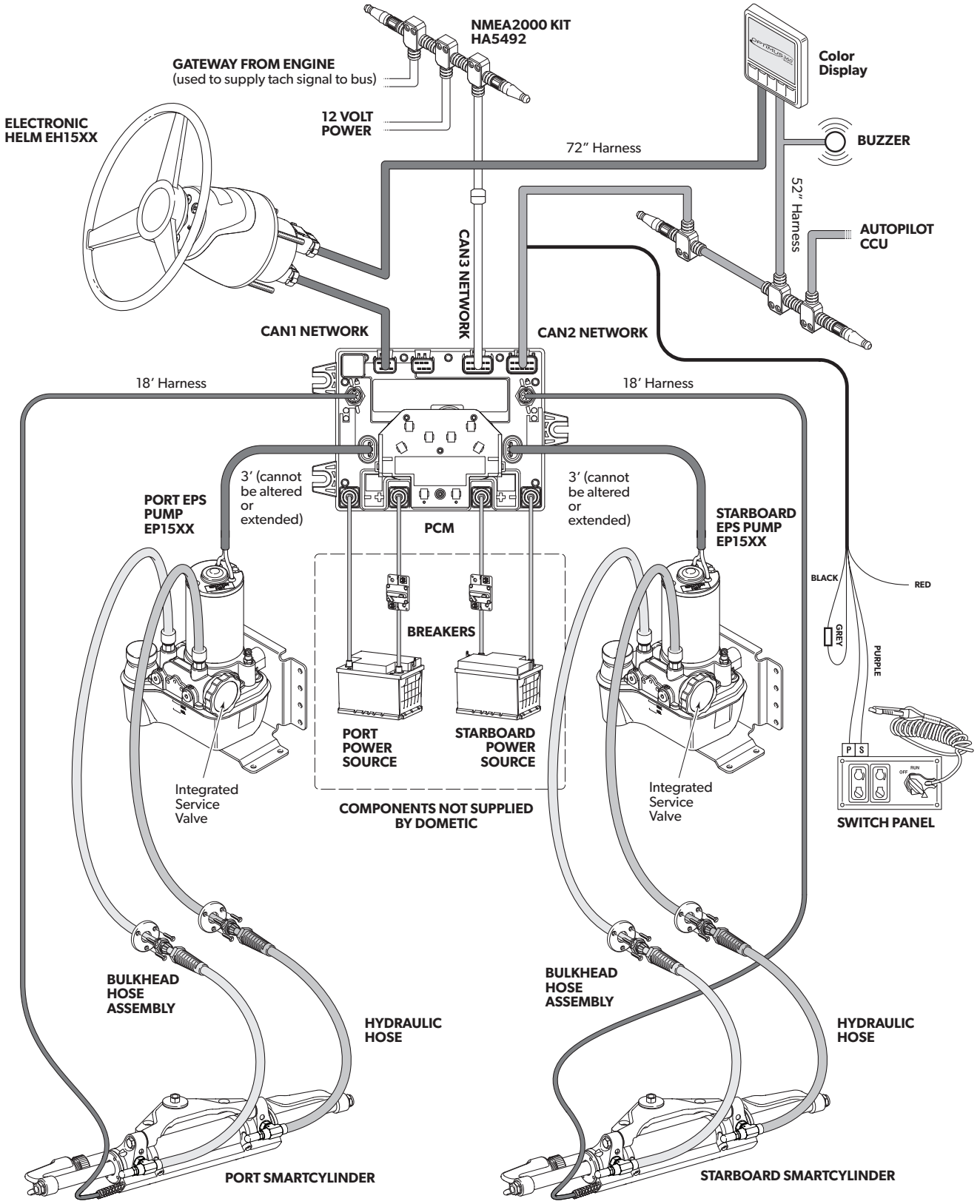


Note: If the boat has an autopilot, use this configuration to introduce the steering commands into the PCM. You will need to order the CM20304 harness along with a NMEA kit CM20001 instead of the CM20032 harness. An additional harness, CM100XX, might be necessary to extend inside the center console.

For reference only and subject to change.

INSTALLATION - OUTBOARD ENGINES

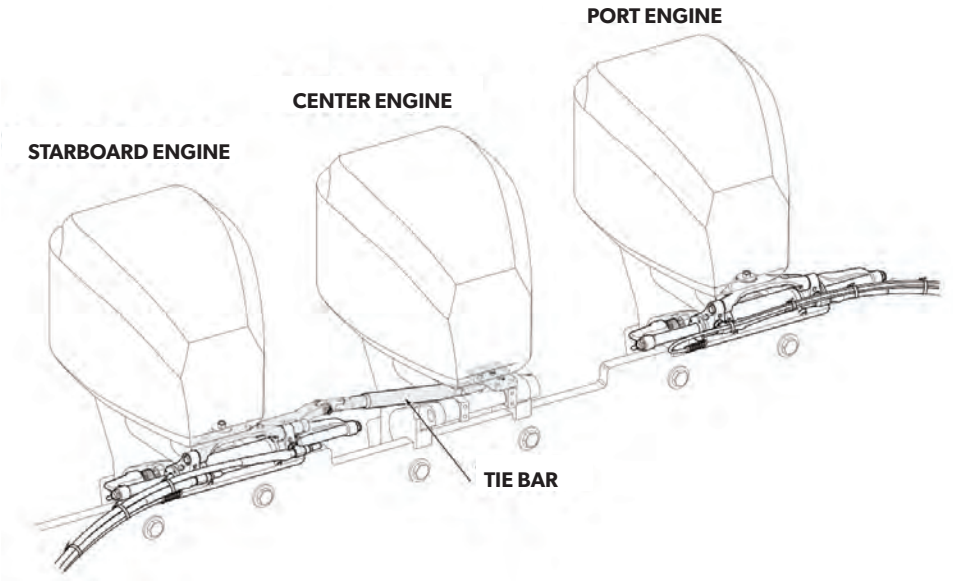
System Schematic - Dual Engine



For reference only and subject to change.

INSTALLATION - OUTBOARD ENGINES

Tie Bar Arrangement - Triple Engine

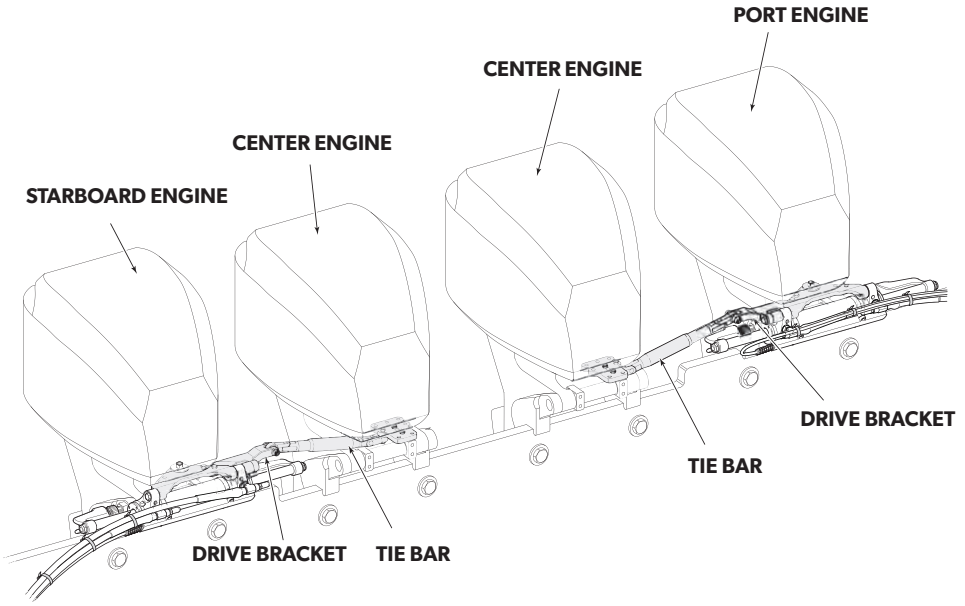


For reference only and subject to change.

Tie Bar Arrangement - Quad Engine

Configuration shown with Drive Brackets.

Tiller extension option available.



For reference only and subject to change.

OPTIMUS EPS

5000 SERIES
FOR INBOARD ENGINE APPLICATIONS 40-100+'

APPLICATIONS FOR OPTIMUS EPS

Inboard Applications 40-100'+

- Most single and twin inboard engine boats – electronic and mechanical controlled
- Single, twin and triple helm station yachts
- Performance motor yachts, express convertibles, and sport yachts

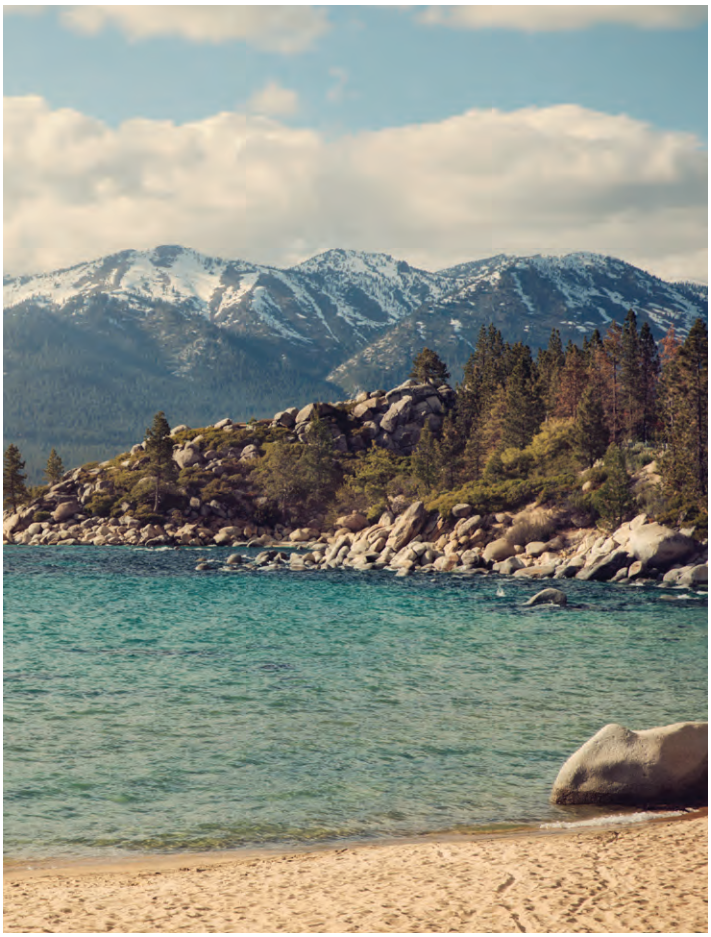
Specifications

Environmental

- Operating temperature: -18°C to +77°C [ISO 25197]
- Storage temperature: -40°C to +85°C [ISO 25197]
- Corrosion resistance: 300 hours salt spay [ASTM B117]
- Water ingress protection: IPX7 [IEC 60529]
- Random vibration: 0.0284 g^2/Hz [ABYC P-27]
- Resonant vibration: 4 G zero-peak, 20-2000 Hz [ABYC P-27]
- Mechanical shock: 50 G, 11 m-sec half-sine shape [ISO 25197]
- Ignition protection: SAEJ-1171
- Meets EN60945 electro-magnetic compatibility requirement

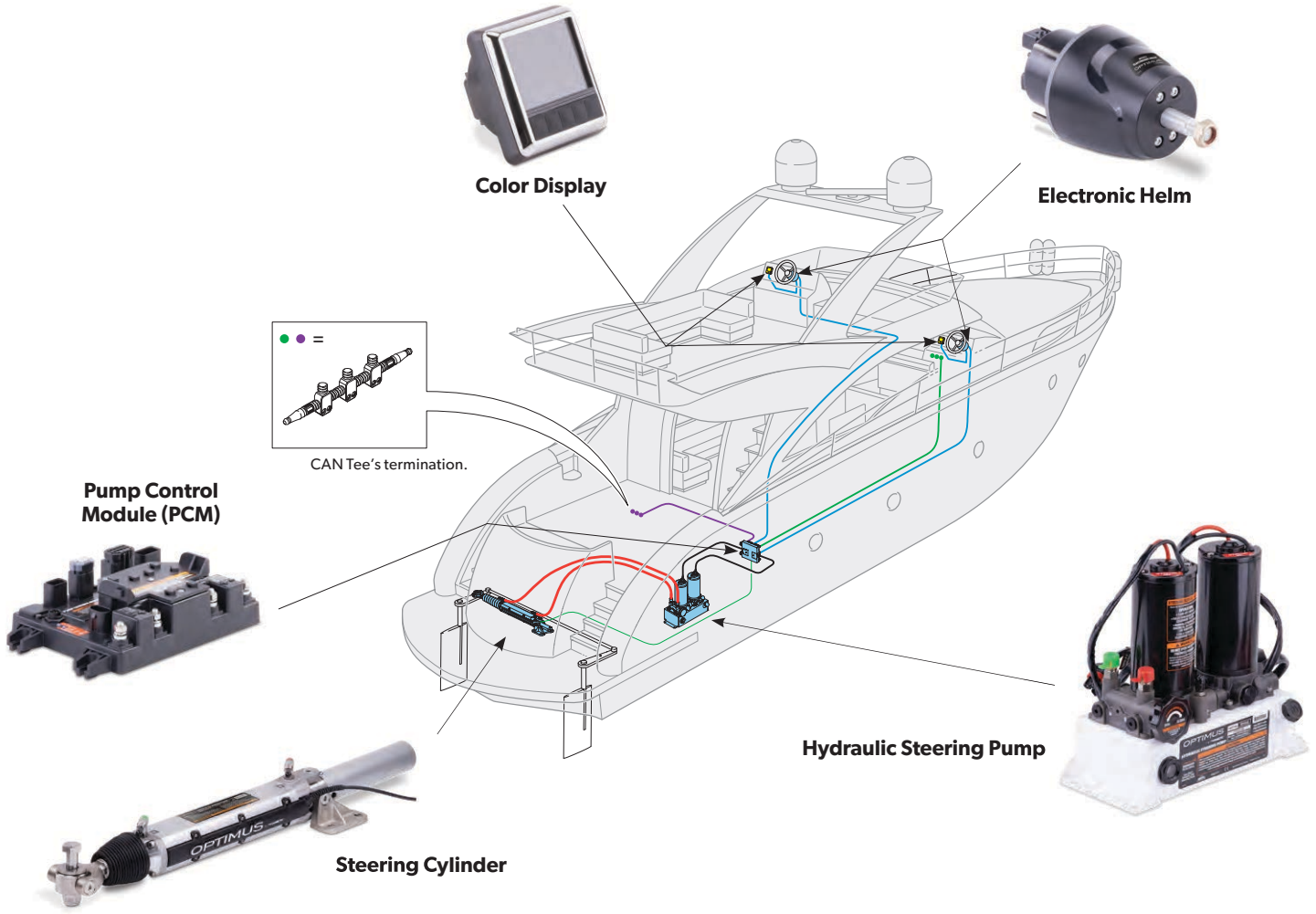
Features

- Up to three helm stations
- Automatic battery management with sensing, warnings & best battery selection
- On demand hydraulic steering pump minimizing power consumption
- No oil at the helm
- Rugged electronics for 24 VDC applications
- Color dash display showing rudder command and rudder position
- Displays system health
- Display provides system setup interface
- Communicates faults and any handling instructions to the operator
- No requirement for tie-bars depending on rudder loads.
- Simple software updating via USB port
- Programmable number of turns lock to lock with speed
- Auto-adjusting steering end stops and resistance with speed
- Dual redundant position sensing on all moving components
- Helm offers both 3/4" taper or 1" straight shaft options
- Utilizes fault tolerant CAN network
- Full autopilot CANbus connectivity and integration. No additional pumps or sensors required
- Adjustable max rudder hard over angle with speed range 25° to 40° Center to hard over
- Rudder toe in or out up to 5° with speed
- Position proportional rudder gain for faster steering response near neutral rudder position
- RPM input: NMEA 2000, J1939 or analog pulse compatible
- Pump features an Integrated service/bypass valve allows a limp home mode
- Meets or exceeds ABYC, ISO and SAE electrical and environmental requirements



THE TECHNOLOGY - INBOARD ENGINES

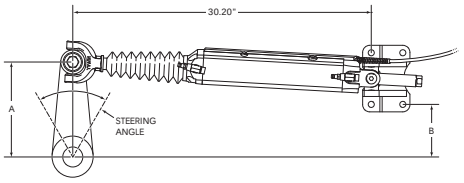
System Components



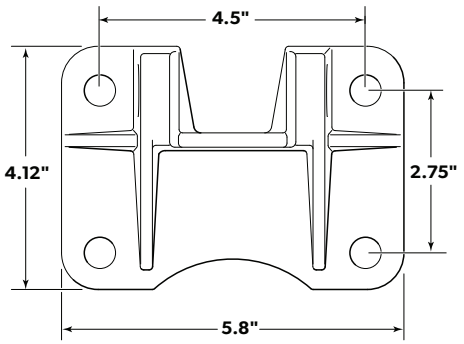
For reference only and subject to change.

INSTALLATION - INBOARD ENGINES

System Schematic - Yachts 80 Feet & Up



Cylinder at mid-stroke.



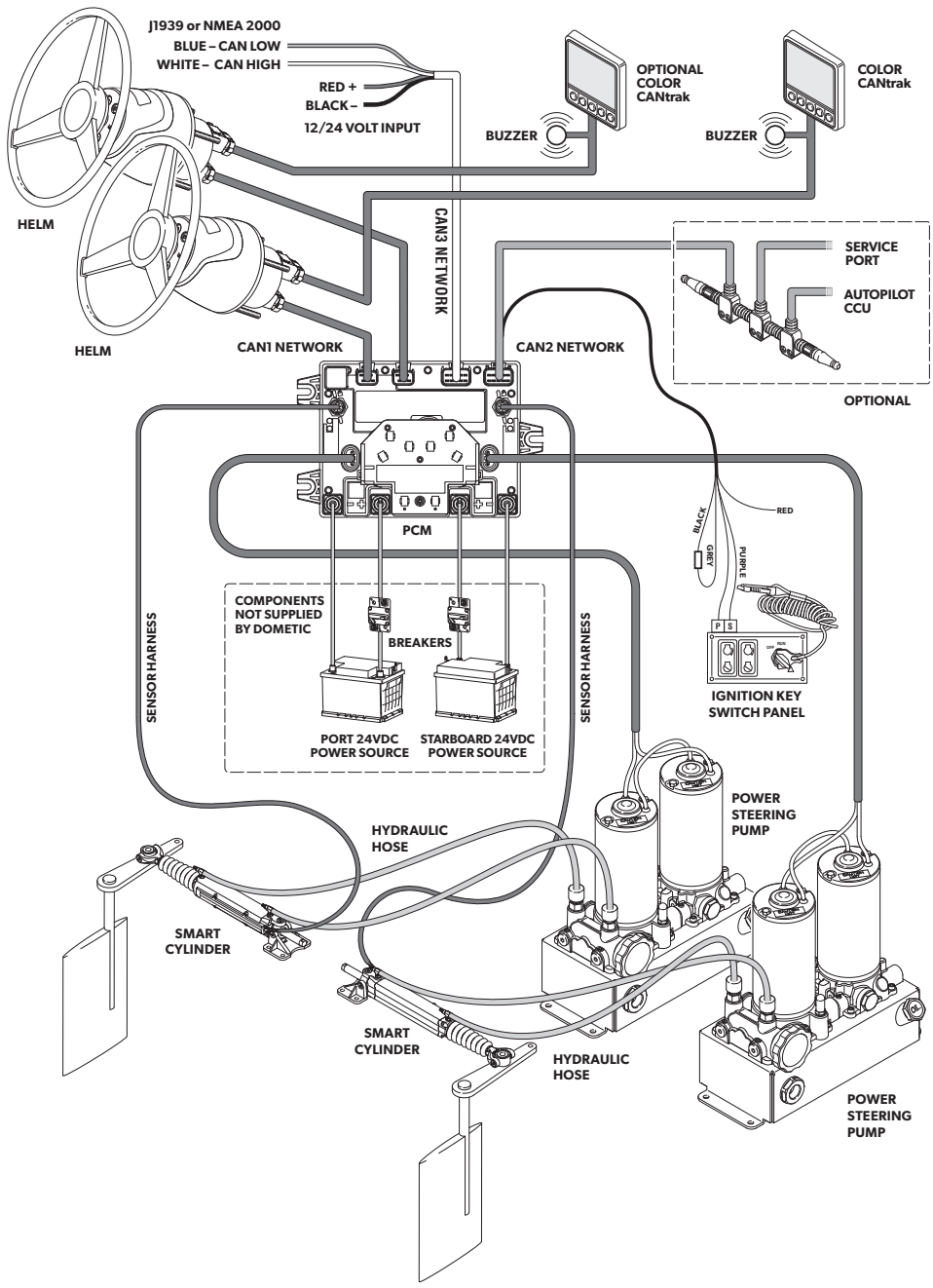
Mounting foot.

MOUNTING CONFIGURATIONS & SYSTEM SCHEMATIC

While using the table below be sure that your steering cylinder is at mid-stroke as shown in the figure above to ensure the cylinder operates correctly.

MODEL EC5850			
Steering Angles			
50°		60°	
A	B	A	B
14.20"	10.62"	12.00"	8.14"
70,800 in-lb		57,200 in-lb	

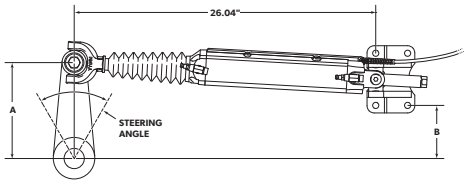
Steering Angles			
70°		80°	
A	B	A	B
10.46"	6.32"	9.33"	4.90"
47,100 in-lb		39,300 in-lb	



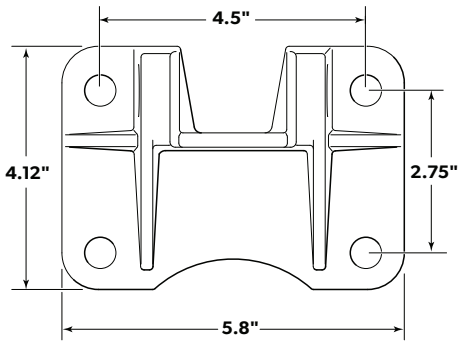
For reference only and subject to change.

INSTALLATION - INBOARD ENGINES

System Schematic - Yachts 60-100 Feet Range



Cylinder at mid-stroke.



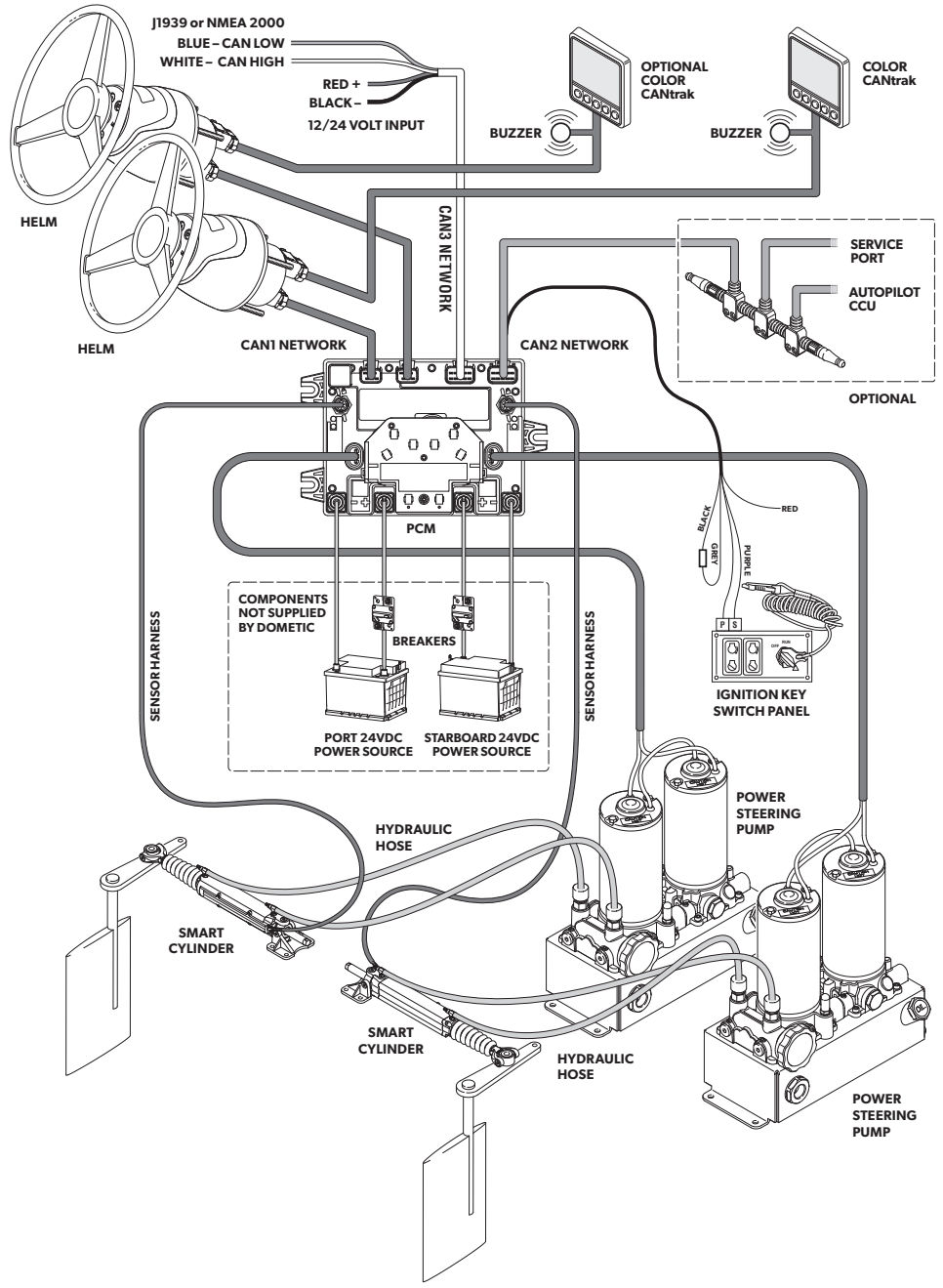
Mounting foot.

Mounting Configurations & System Schematic

While using the table below be sure that your steering cylinder is at mid-stroke as shown in the figure above to ensure the cylinder operates correctly.

MODEL EC5810			
Steering Angles			
50°		60°	
A	B	A	B
11.27"	7.96"	9.50"	5.98"
56,300 in-lb		45,400 in-lb	

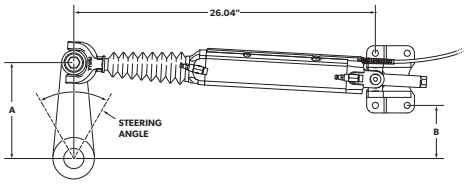
Steering Angles			
70°		80°	
A	B	A	B
8.25"	4.50"	7.40"	3.41"
37,400 in-lb		31,200 in-lb	



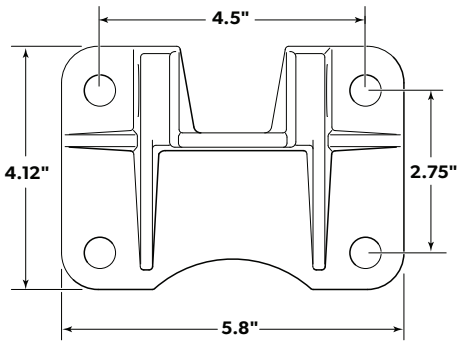
For reference only and subject to change.

INSTALLATION - INBOARD ENGINES

System Schematic - Yachts Approx. 55-70 Feet Range



Cylinder at mid-stroke.



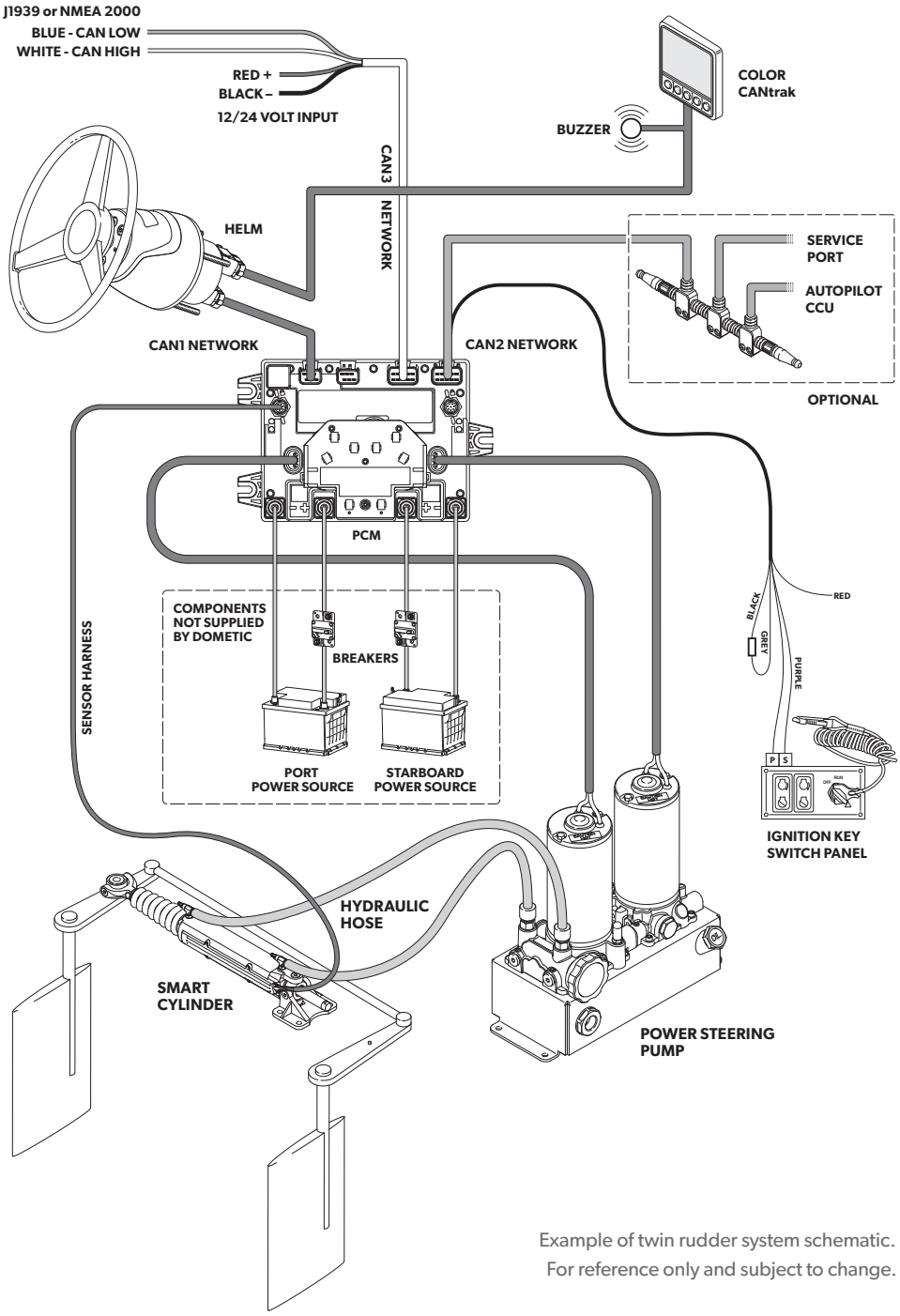
Mounting foot.

Mounting Configurations & System Schematic

While using the table below be sure that your steering cylinder is at mid-stroke as shown in the figure above to ensure the cylinder operates correctly.

MODEL EC5810			
Steering Angles			
50°		60°	
A	B	A	B
11.27"	7.96"	9.50"	5.98"
56,300 in-lb		45,400 in-lb	

Steering Angles			
70°		80°	
A	B	A	B
8.25"	4.50"	7.40"	3.41"
37,400 in-lb		31,200 in-lb	



Example of twin rudder system schematic. For reference only and subject to change.


OPTIMUS EPS
FOR VESSELS REQUIRING CLASS CERTIFICATION
PORT
Pierre CANTO
DOMETIC
Caramel
280SX
CANNES
9

FOR CLASS CERTIFIED VESSELS LESS THAN 500 GROSS TONNES

The class certified Optimus EPS 5000 series system meets RINA's and ABS' stringent "fit for purpose" safety standard.

With type approval this class certified system is ready to install out of the box, simplifying vessel inspection and the final sign off process.

The incredible feel you get when you're behind the wheel of a boat equipped with Optimus EPS is the result of an innovative array of technology and engineering. Each component has been designed to complement the other, resulting in a seamless experience of steering control in virtually every situation on the water. The high level of engineering also extends to the reliability of the system, with quality materials, careful manufacturing and redundant systems, all to stand up to the rigors of life on the water.

As the captain of your vessel you know how important it is to have command of your yacht. Optimus EPS gives you the steering control, performance and comfort you expect. With Optimus EPS, you can take command of your yacht without having to arm-wrestle for control.

Specifications

Environmental

Operating temperature: -18°C to +77°C [ISO 25197]

Storage temperature: -40°C to +85°C [ISO 25197]

Corrosion resistance: 300 hours salt spray [ASTM B117]

Water ingress protection: IPX7 [IEC 60529]

Random vibration: 0.0284 g^2/Hz [ABYC P-28]

Resonant vibration: 4 G zero-peak, 20-2000 Hz [ABYC P-28]

Mechanical shock: 50 G, 11 m-sec half-sine shape [ISO 25197]

Ignition protection: SAEJ-1171

Meets EN60945 electro-magnetic compatibility requirement

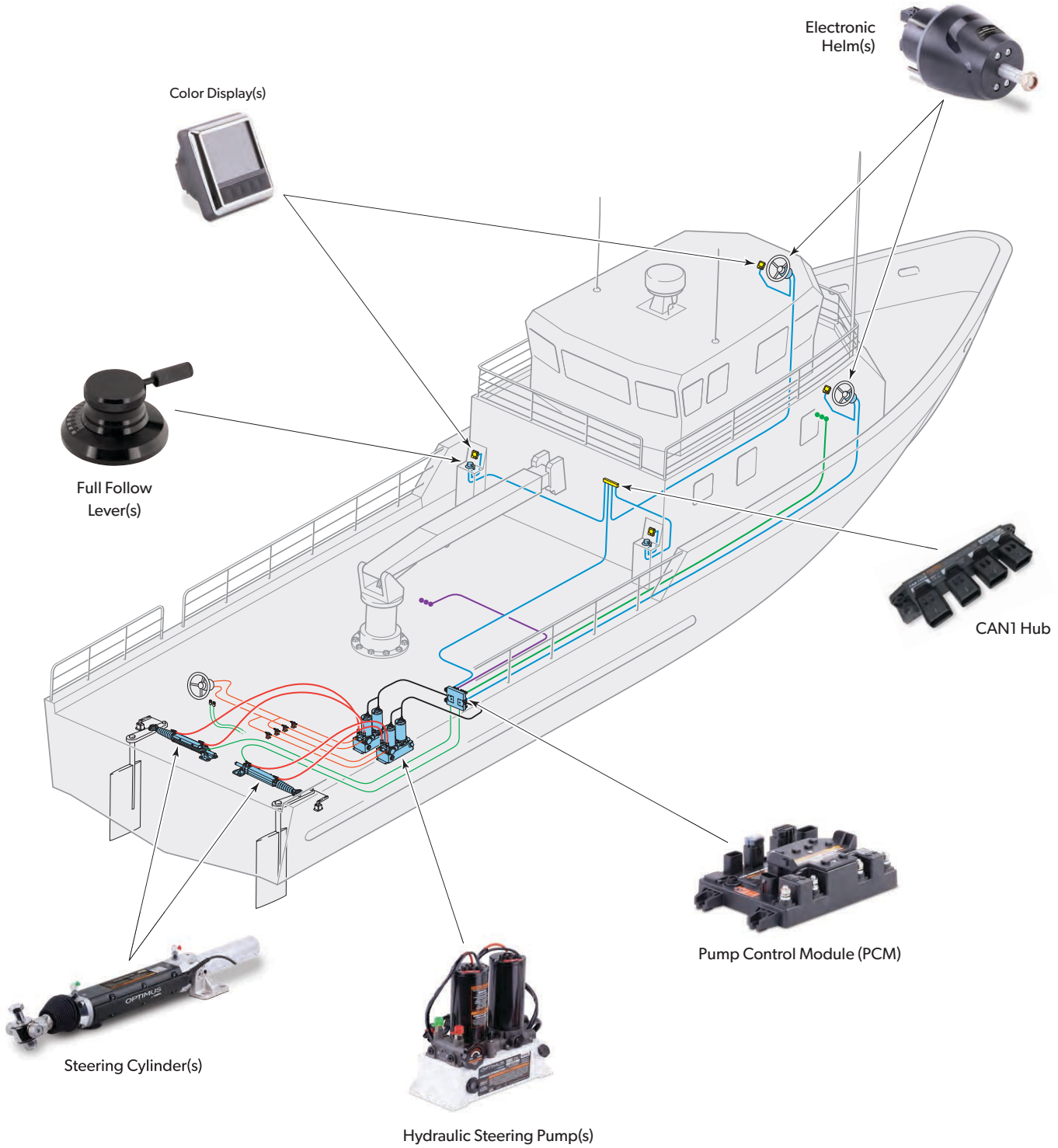
Flammability tested: IEC 60332-1-2, IEC 60332-1-3, SAE J1128

Features

- Up to a maximum four helm/full follow up lever stations
  - 1 helm 3 full follow up levers
  - 2 helms 2 full follow up levers
  - 3 helms 1 full follow up lever
  - 3 helms only
- Automatic battery management with sensing, warnings and best battery selection
- On demand hydraulic steering pump minimizes power consumption
- Rugged electronics for 24 VDC applications
- Color dash display showing rudder command and rudder position graphic
- Displays system health and provides setup interface
- Communicates faults and any special handling instructions to the operator
- Simple software updating via USB port
- Programmable number of turns lock to lock with speed
- Auto-adjusting steering end stops and resistance with speed
- Dual redundant position sensing on all moving components
- Helm offers both 3/4" taper or 1" straight shaft options
- Utilizes fault tolerant CAN network
- Full autopilot CANbus connectivity and integration
  - No additional pumps or sensors required
- Adjustable with speed, maximum rudder angle to 70°
- Rudder toe in or out up to 5° auto adjusts with speed
- Position proportional rudder gain for faster steering response near neutral rudder position
- RPM input: NMEA 2000, J1939 or analog pulse compatible
- Pump features an integrated service/bypass valve for manual rudder centering
- Meets or exceeds ABYC, ISO requirements.

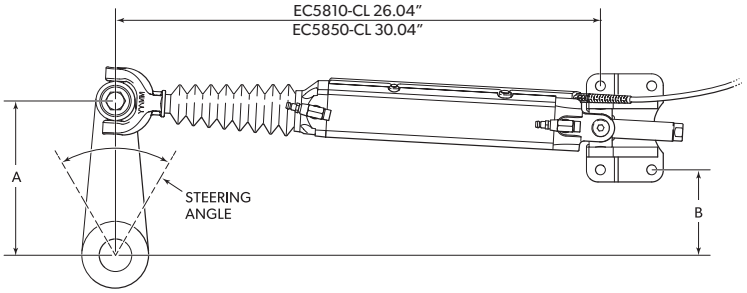
THE TECHNOLOGY - INBOARD ENGINES

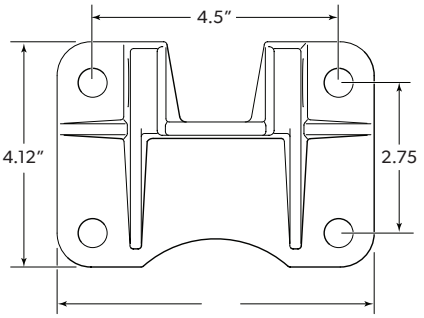
System Components



INSTALLATION - INBOARD ENGINES

System Schematic - For RINA Class Certified Vessels Less Than 500 Gross Tonnes



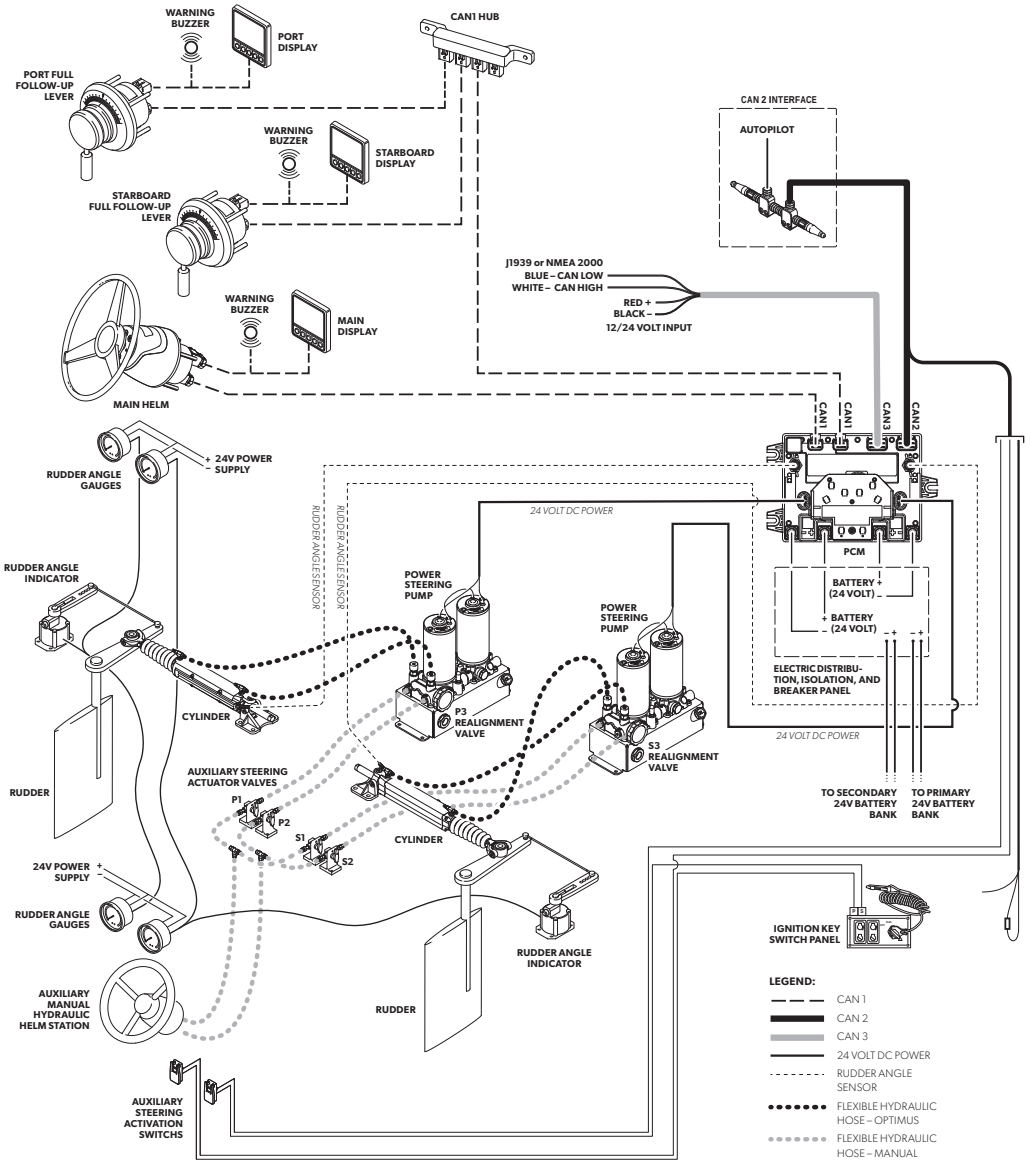


MODEL EC5810-CL	
70° Steering Angle	
A	B
8.25″ (210 mm)	4.50″ (114 mm)
37,400 in-lbs* (4,191 Nm)*	

MODEL EC5850-CL	
70° Steering Angle	
A	B
10.46″ (266 mm)	6.32″ (166 mm)
47,100 in-lbs* (5,320 Nm)*	

Manual hydraulic steering system shown in schematic. Kit number HA6501 contains:

- HH5271-3 hydraulic helm
- 214457 shut off valve kit inc fittings
- 682684 electrical switch
- 60065 Hydraulic Tee
- 343088 Straight Hydraulic fitting



Example of class system with port and starboard wing stations.

Dometic reserves the right to make changes to specifications without notice.


OPTIMUS EPS
4000 SERIES
FOR INBOARD PERFORMANCE YACHTS APPLICATIONS 40-60'

APPLICATIONS FOR OPTIMUS EPS

Inboard Applications 40-60’

- Most single and twin inboard engine boats – electronic and mechanical controlled
- Single, twin and triple helm station yachts
- Performance motor yachts, express convertibles, and sport yachts

Specifications

Environmental

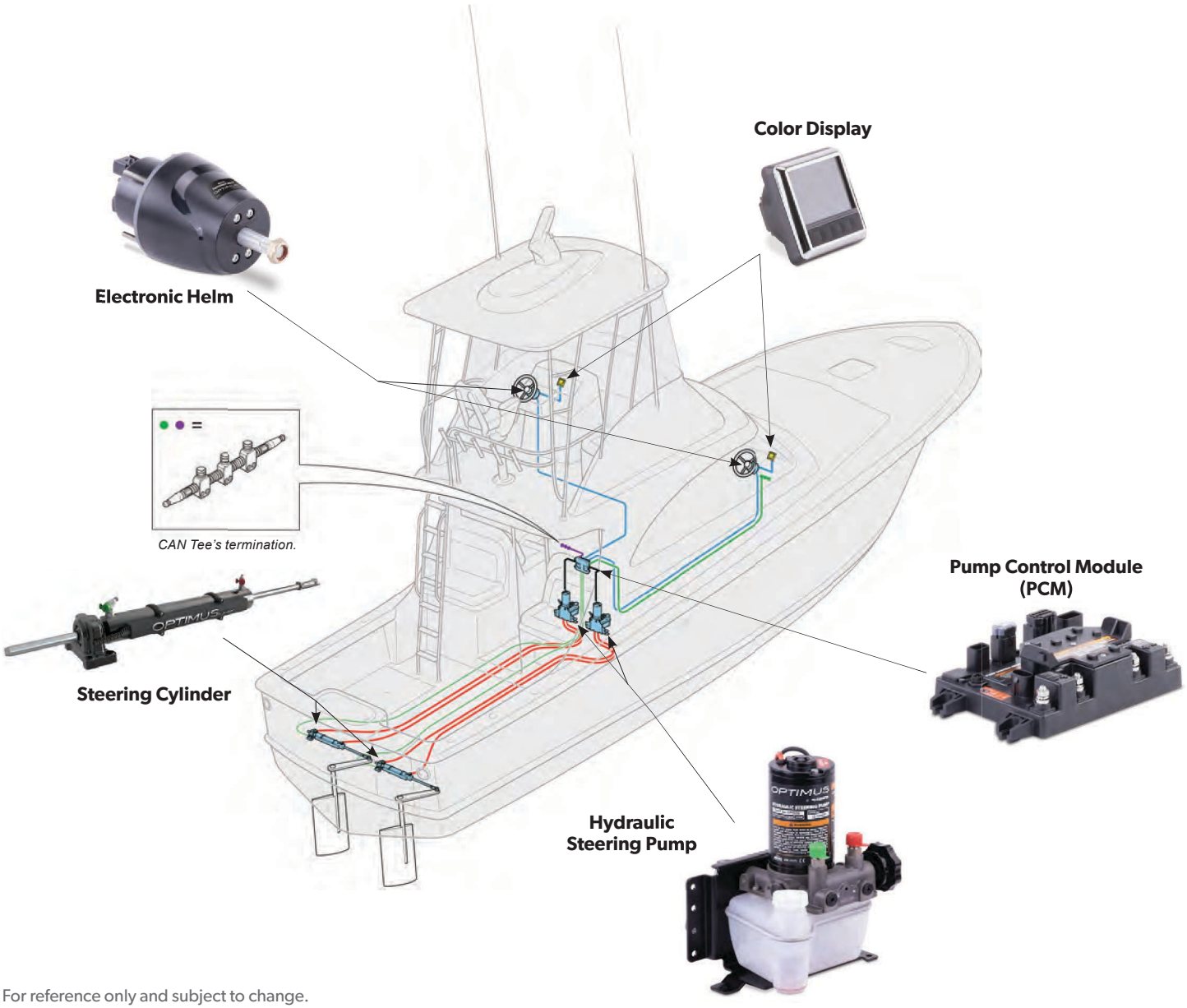
- Operating temperature: -18°C to +77°C [ISO 25197]
- Storage temperature: -40°C to +85°C [ISO 25197]
- Corrosion resistance: 300 hours salt spay [ASTM B117]
- Water ingress protection: IPX7 [IEC 60529]
- Random vibration: 0.0284 g^2/Hz [ABYC P-27]
- Resonant vibration: 4 G zero-peak, 20-2000 Hz [ABYC P-27]
- Mechanical shock: 50 G, 11 m-sec half-sine shape [ISO 25197]
- Ignition protection: SAEJ-1171
- Meets EN60945 electro-magnetic compatibility requirement

Features

- Up to three helms stations
- Automatic battery management with sensing, warnings & best battery selection
- On demand hydraulic steering pump minimizing power consumption
- No oil at the helm
- Rugged electronics for 12 or 24 VDC applications
- Color dash display showing rudder command and rudder position graphic
- Displays system health
- Display provides system setup interface
- Communicates faults and any special handling instructions to the operator
- No requirement for tie-bars depending on rudder loads
- Simple software updating via USB port
- Programmable number of turns lock to lock with speed
- Auto-adjusting steering end stops and resistance with speed
- Dual redundant position sensing on all moving components
- Helm offers both 3/4” taper or 1” straight shaft options
- Utilizes fault tolerant CAN network
- Full autopilot CANbus connectivity and integration. No additional pumps or sensors required
- Adjustable max rudder hard over angle with speed range 25° to 40° Center to hard over
- Rudder toe in or out up to 5° with speed
- Position proportional rudder gain for faster steering response near neutral rudder position
- RPM input: NMEA 2000, J1939 or analog pulse compatible
- Pump features an Integrated service/bypass valve allows a limp home mode
- Meets or exceeds ABYC, ISO and SAE electrical and environmental requirements

THE TECHNOLOGY - INBOARD ENGINES

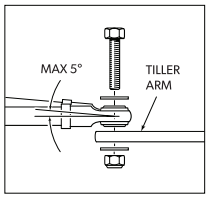
System Components



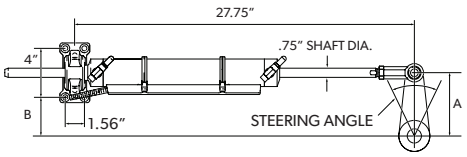
For reference only and subject to change.

INSTALLATION - INBOARD ENGINES

System Schematic - Yachts 40-60 Feet Range



Attachment to Tiller Arm, recommended per ABYC.



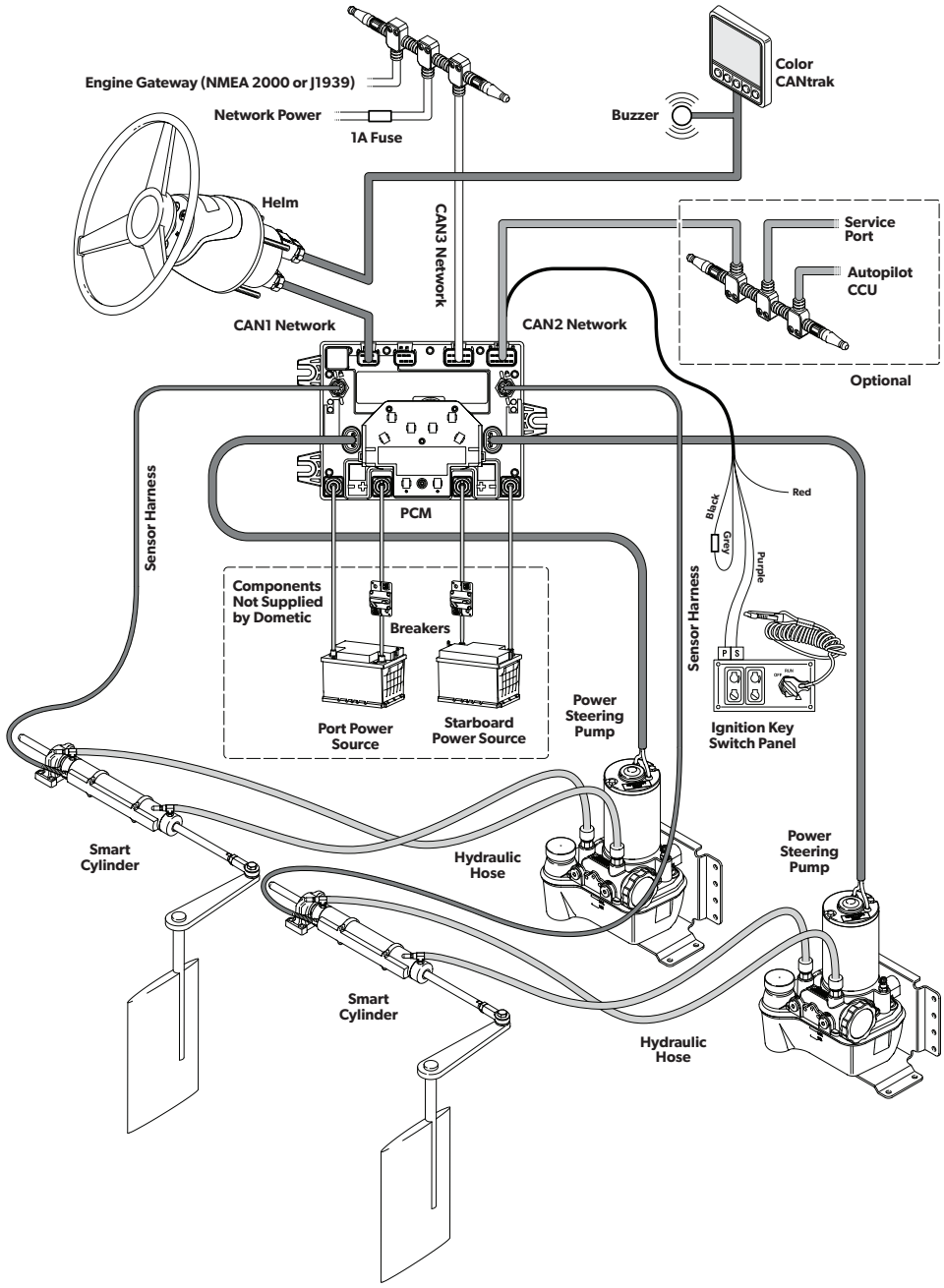
Cylinder at mid-stroke.

Mounting Configurations & System Schematic

While using the table below be sure that your steering cylinder is at mid-stroke as shown in the figure above to ensure the cylinder operates correctly.

MODEL EC5390 (9" Stroke)			
Steering Angles			
50°		**60°**	
A	B	A	B
10.64"	7.65"	9.00"	5.79"
37,782 in-lb		30,515 in-lb	

Steering Angles			
70°		**80°**	
A	B	A	B
7.84"	4.247"	9.33"	4.90"
25,161 in-lb		20,996 in-lb	



Example of twin rudder system schematic.
For reference only and subject to change.

OPTIMUS EPS

3000 SERIES
FOR INBOARD & STERNDRIVE APPLICATIONS UNDER 40'

APPLICATIONS FOR OPTIMUS EPS

Inboard & Sterndrive Applications Under 40’

- Most single and twin inboard & sterndrive engine boats - electronic and mechanical controlled
- Single and twin helm station boats
- Competition ski boats, cruisers, sport fishing yachts

Specifications

Environmental

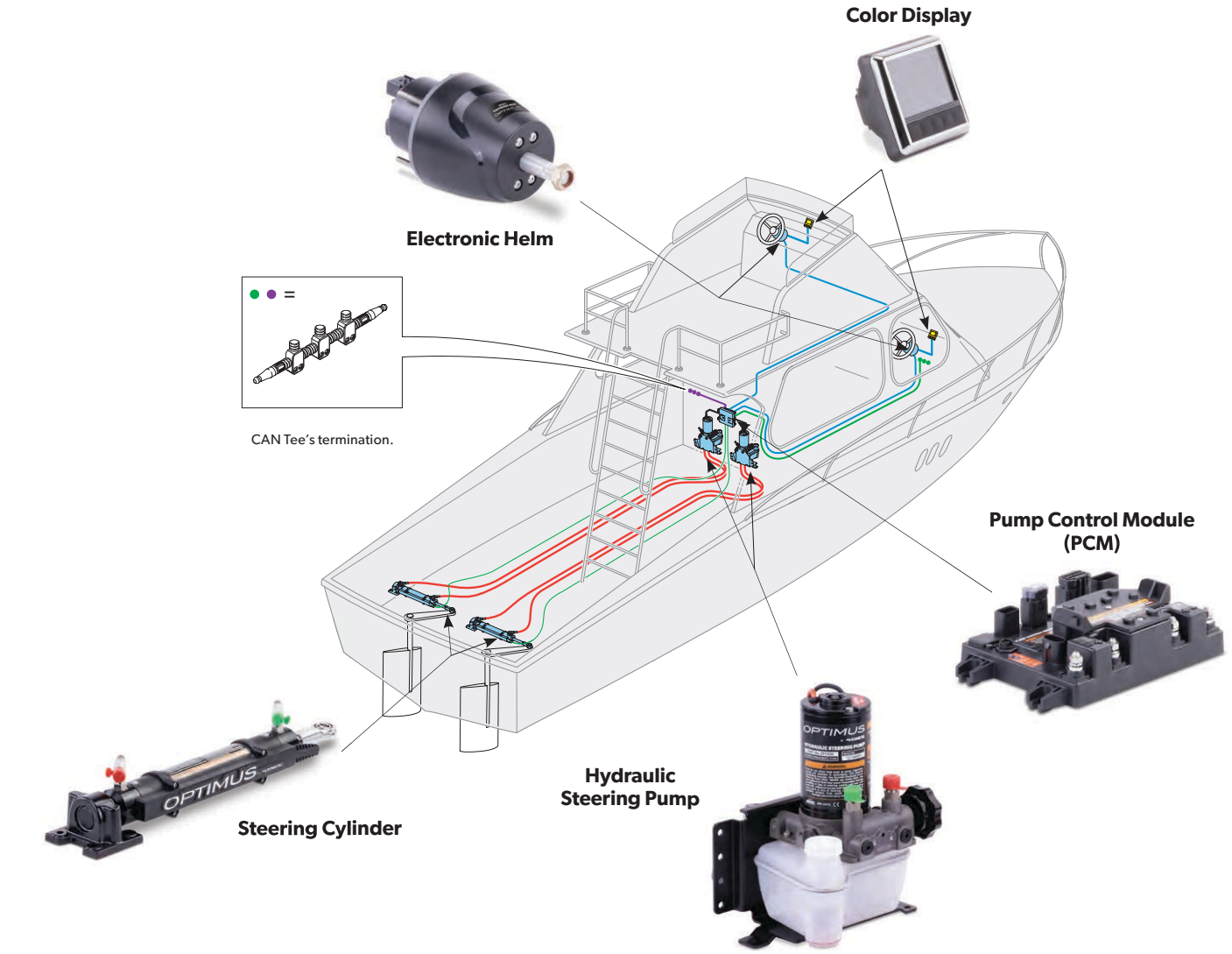
- Operating temperature: -18°C to +77°C [ISO 25197]
- Storage temperature: -40°C to +85°C [ISO 25197]
- Corrosion resistance: 300 hours salt spay [ASTM B117]
- Water ingress protection: IPX7 [IEC 60529]
- Random vibration: 0.0284 g^2/Hz [ABYC P-27]
- Resonant vibration: 4 G zero-peak, 20-2000 Hz [ABYC P-27]
- Mechanical shock: 50 G, 11 m-sec half-sine shape [ISO 25197]
- Ignition protection: SAEJ-1171
- Meets EN60945 electro-magnetic compatibility requirement

Features

- Up to three helms stations
- Automatic battery management with sensing, warnings & best battery selection
- On demand hydraulic steering pump minimizing power consumption
- No oil at the helm
- Rugged electronics for 12 or 24 VDC applications
- Color dash display showing rudder command and rudder position graphic
- Displays system health
- Display provides system setup interface
- Communicates faults and any special handling instructions to the operator
- Simple software updating via USB port
- Programmable number of turns lock to lock with speed
- Auto-adjusting steering end stops and resistance with speed
- Dual redundant position sensing on all moving components
- Helm shaft: 3/4” taper
- Utilizes fault tolerant CAN network
- Full autopilot CANbus connectivity and integration. No additional pumps or sensors required
- Adjustable max rudder hard over angle with speed range 20° to 30° Center to hard over
- Position proportional rudder gain for faster steering response near neutral rudder position
- RPM input: NMEA 2000, J1939 or analog pulse compatible
- Pump features an Integrated service/bypass valve allows a limp home mode
- Meets or exceeds ABYC, CE, ISO and SAE electrical and environmental requirements

THE TECHNOLOGY - INBOARD & STERNDRIVE ENGINES

System Components



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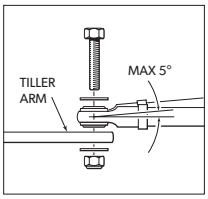
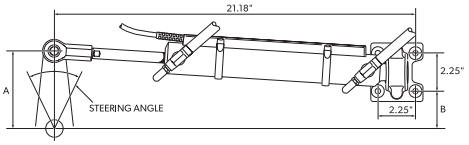
INSTALLATION - INBOARD & STERNDRIVE ENGINES

System Schematic - Inboard Yachts 18-34 Feet Range

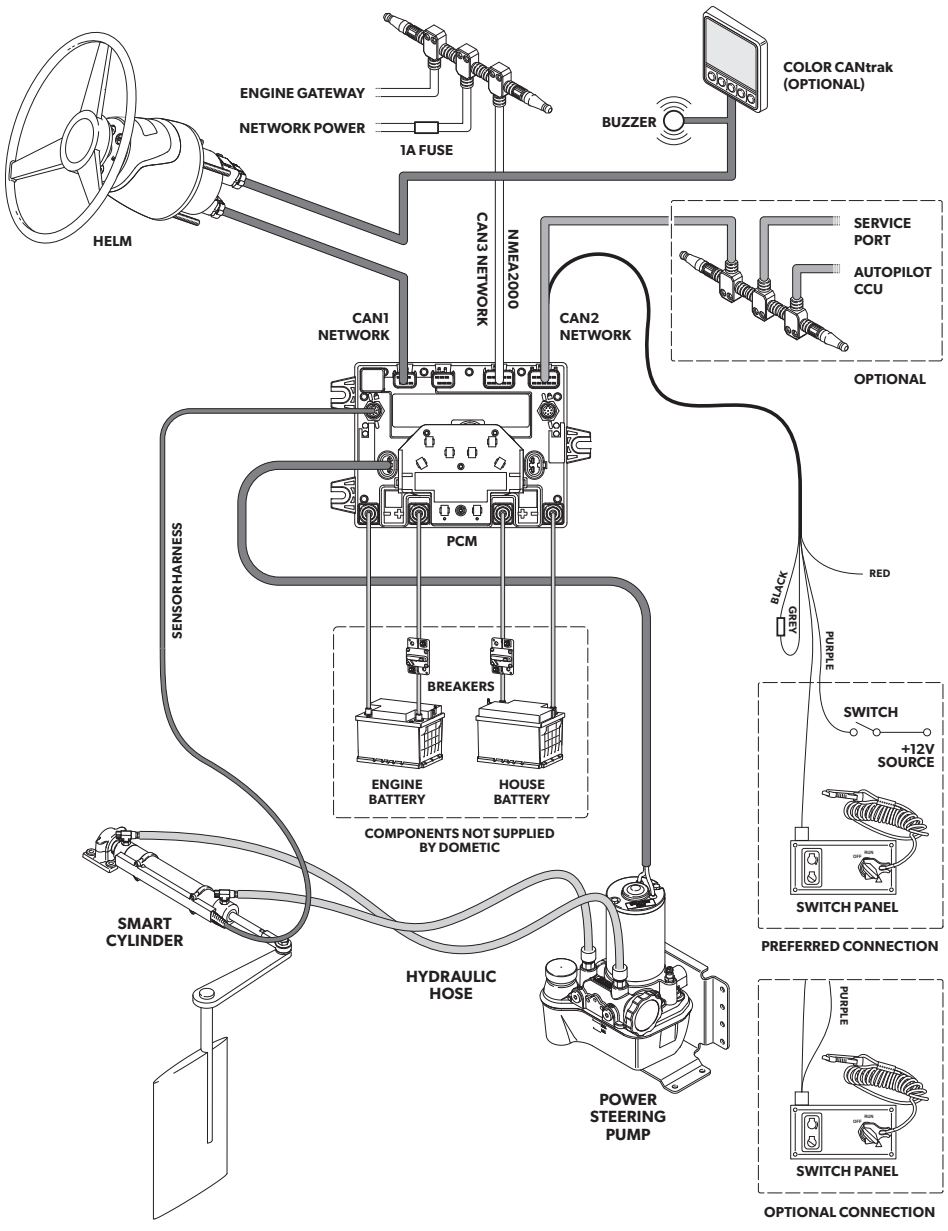


Attachment to Tiller Arm, recommended per ABYC.



MODEL EC5380			
Steering Angles			
50°		**60°**	
A	B	A	B
8.33"	6.34"	7.04"	4.98"
11,004 in-lb		8,887 in-lb	

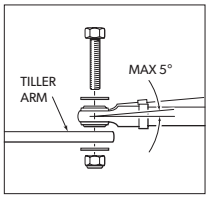
Steering Angles			
70°		**80°**	
A	B	A	B
6.14"	3.91"	5.48"	3.07"
7,328 in-lb		6,115 in-lb	



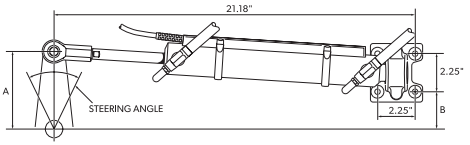
Example of single rudder system schematic.
For reference only and subject to change.

INSTALLATION - INBOARD & STERNDRIVE ENGINES

System Schematic - Inboard Yachts 30-50 Feet Range

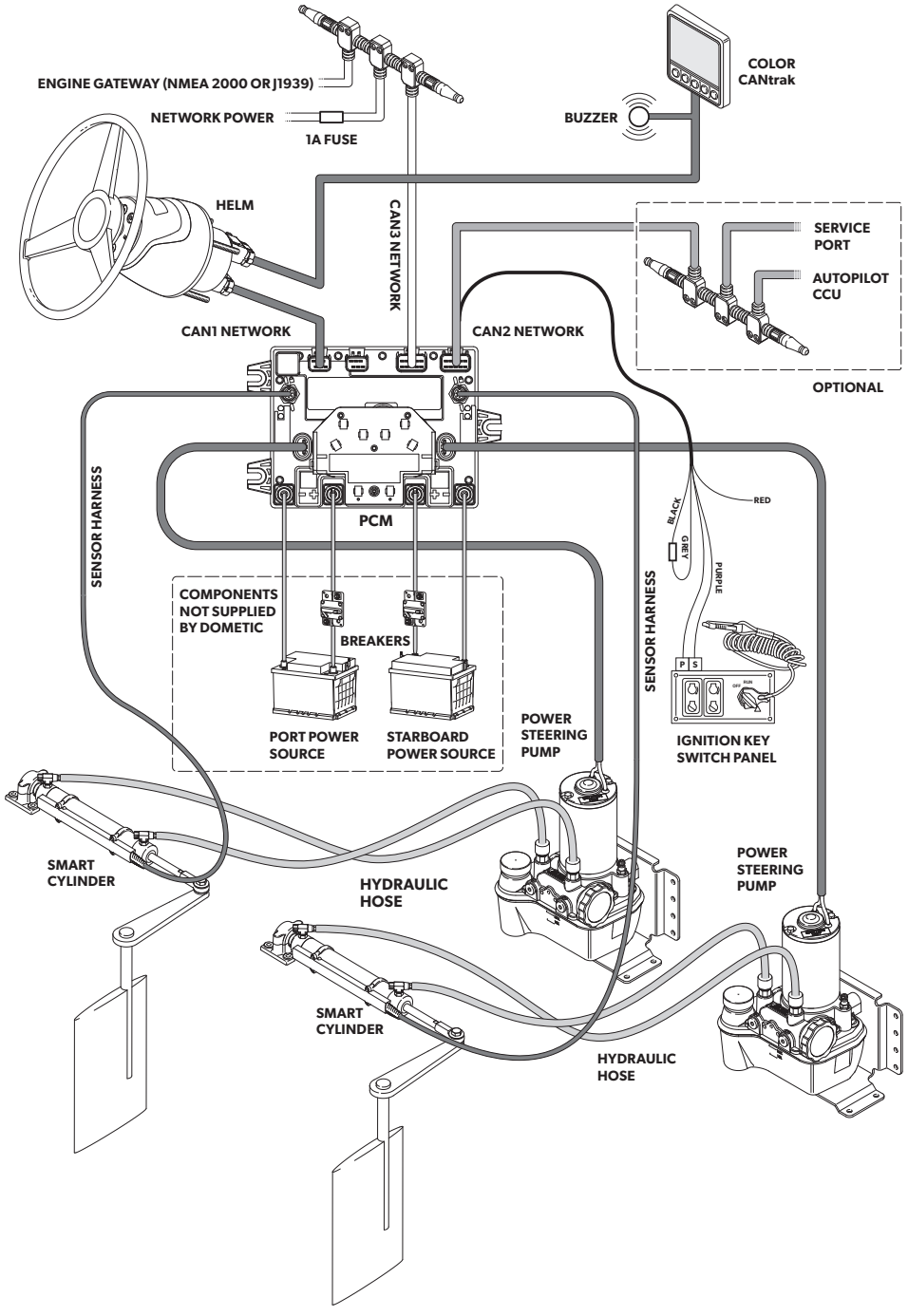


Attachment to Tiller Arm, recommended per ABYC.



MODEL EC5380			
Steering Angles			
50°		60°	
A	B	A	B
8.33"	6.34"	7.04"	4.98"
11,004 in-lb		8,887 in-lb	

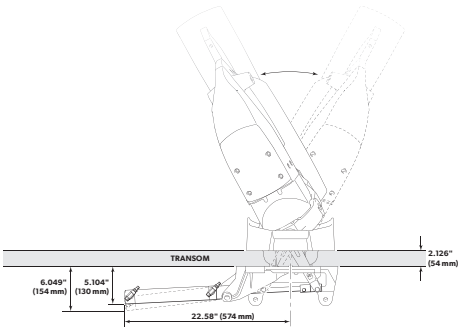
Steering Angles			
70°		80°	
A	B	A	B
6.14"	3.91"	5.48"	3.07"
7,328 in-lb		6,115 in-lb	



Example of twin rudder system schematic.
For reference only and subject to change.

INSTALLATION - INBOARD & STERNDRIVE ENGINES

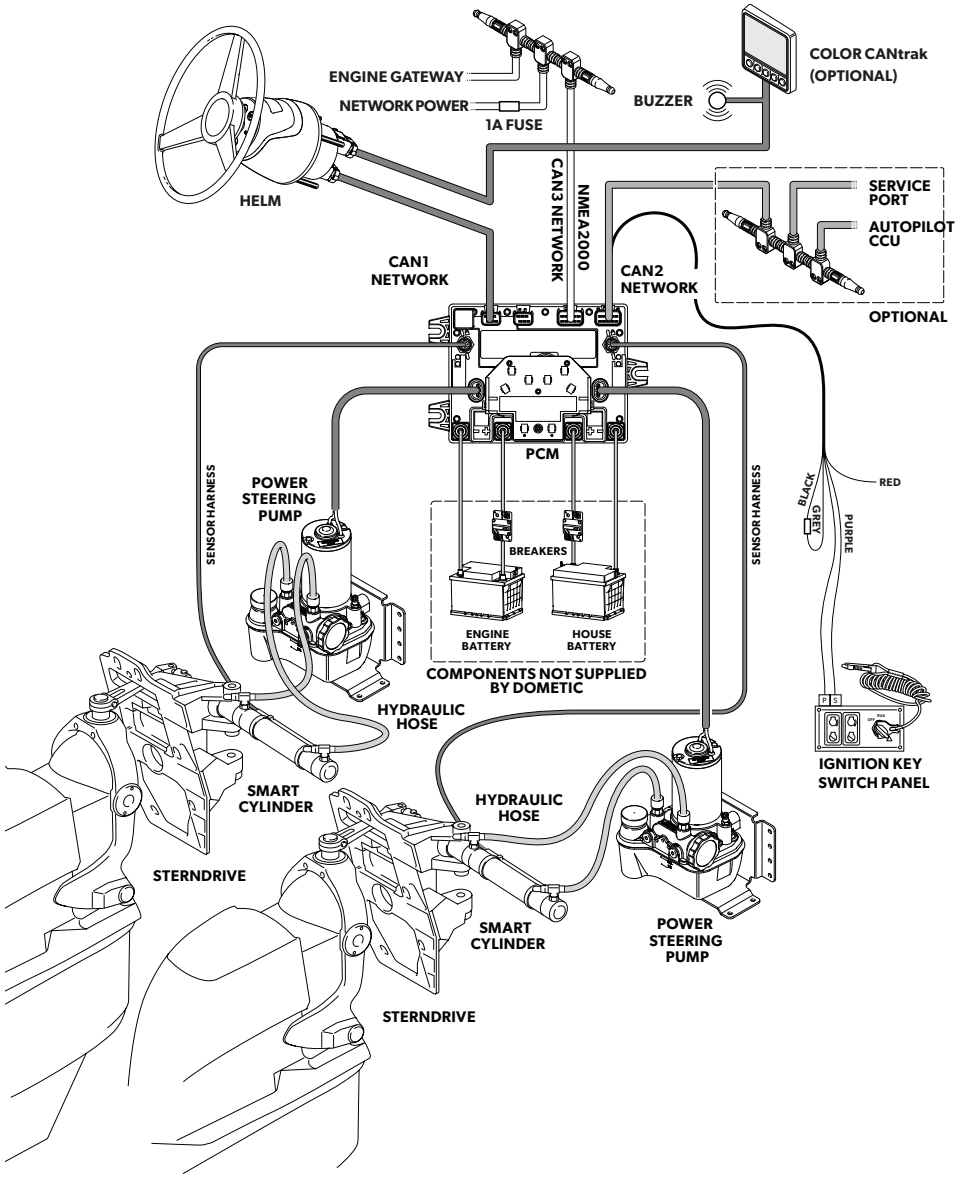
System Schematic - Sterndrive Vessels



VOLVO	
DPH DUOPROP	No
DPR DUOPROP	No
DPS DUOPROP	Yes
DPS-A	Yes
DPS-A OXI	Yes
DPS-B	Yes
DPS-B1	Yes
DPS-M	Yes
DP-E	No
DP-G	No
DP-X	No
OCEAN X (DPS-B OXI)	Yes
XDP	Yes
XDP-B	Yes
SX	Yes
SX-A	Yes

MERCURY	
BRAVO 1	Yes
BRAVO 11	Yes
BRAVO 111	Yes
ALPHA 1 GEN 1	Yes
ALPHA 1 GEN 2	Yes
BRAVO X 1	Yes
BRAVO X 11	Yes
BRAVO X 111	Yes
BRAVO X R	Yes
BRAVO X R ITS	No
BRAVO X SPORTSMAN	Yes

YANMAR	
ZT 370	Yes
ZT 350	Yes



Example of twin sterndrive schematic.
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