DOMETIC

SEASTAR OPTIMUS EPS

EN **Inboard Electronic Power Steering with Electric Actuator**
Installation Manual — Book 55

[**REVISION A**] Form No. 101004 | © 2023 Dometic

Installer: Please read this manual, and any other documentation included with this system, before attempting installation. All manuals included with this system must be delivered to the boat owner when installation is complete.

Owner: store your manuals on the boat or in a safe place for future reference. If you sell your boat, hand over the manuals along with it.

Table of contents

1 Explanation of symbols

DANGER!
Safety instruction: Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING!
Safety instruction: Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION!
Safety instruction: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE!
Indicates a situation that, if not avoided, can result in property damage.

NOTE
Supplementary information for operating the product.

2 General safety instructions

The manufacturer accepts no liability for damage in the following cases:

- Physical damage to the product.
- Damage due to incorrect installation or connection voltage.
- Alterations to the product.
- Use for purposes other than those described in the operating manual.

The CE declaration of conformity can be requested from the manufacturer (contact information on the back of this manual).

2.1 General safety

- Read and understand all instructions included with the system prior to use.
- Disconnect power from the actuator (with battery switches or circuit breaker) before attempting any work on the actuator or its connections to the boat.
- Use the electric steering actuator only as intended.
- Keep clear of the actuator and tiller during operation as there are pinch points present.
- See your dealer for repairs if the actuator is modified, damaged or not working correctly.
- The actuator is not user serviceable; do not attempt to disassemble.

2.2 Safety considerations for installers

WARNING!
Optimus EPS with Electric Actuator must be installed by an authorized dealer or OEM boat builder.

Before installation

- Read and understand this manual, and any other manuals supplied with this system.
- Ensure you have all the required components on hand before you start.
- Do not use a wheel-mounted trim switch with coiled cord. The cord can wrap around the steering wheel shaft and inhibit steering.
- When unpacking the actuator, ensure that the Manual Steering Override Kit is kept together with materials that will be passed to the owner.

During installation

- Install components as instructed in this manual. Some component parts and kits may contain additional installation instructions — refer also to those instructions.
- Do not substitute any component of the system. Dometic and Optimus parts are rigorously engineered and tested to ensure system integrity. Substitution of components may compromise safety, performance, and reliability.
- If an instruction is unclear, contradictory, or you are otherwise unsure how to proceed, do not guess. Contact Dometic Marine technical support.

After installation

- Check that there is no interference between the steering actuator(s), transom, hull, tiller, tie bar (if applicable), or any other component over the full stroke of the actuator(s). Steer slowly while performing these checks.
- Check that the actuator harness is free from stretching, rubbing, or chafing over it's full stroke.
- Correct any interference issues before handing the boat to the owner.

WARNING!
Failure to comply with these instructions may result in a loss of steering control, which could lead to a collision and/or ejection from the boat, causing property damage, personal injury, and/or death.

Notes

3 Actuator installation

CAUTION!
This actuator is intended to operate in a primarily dry area that may be wet or occasionally submerged. It is not intended to operate in a permanently submerged condition.

NOTICE!
Protect the actuator shaft from nicks and scratches during installation. A damaged shaft cannot be repaired.

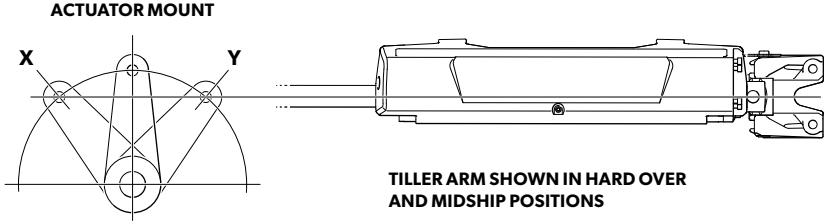
3.1 Install the actuator

NOTE
If you are installing a remote manual override refer to the installation instructions provided with the kit. You may find it easier to install the override guide before installing the actuator.

Proper actuator mounting and alignment is important for system reliability, symmetric steering, and for maximizing the output rudder torque throughout the steering range. Figure **1** shows the optimal actuator alignment, with the actuator shaft centerline defined by an imaginary line drawn through the tiller arm hole at both hard over positions.

WARNING!
Mount actuators using through-bolts and self-locking nuts. Use of lag screws may result in separation of steering components, leading to loss of steering control. Loss of steering control may result in a collision and/or ejection from the boat, leading to property damage, personal injury, and/or death.

1



Procedure:

➤ Determine the mounting location for the actuator, shown in figure **2**. The method depends on whether the tiller arm length is already set:

- o **Tiller arm length is not yet set:** determine the tiller arm length (dimension A) and foot bracket location (dimension B) from table 1.
- o **Tiller arm length is already set:** calculate the foot bracket location (dimension B) using the equation:

B = AcosD – 1.125

Where: A is the tiller arm length
D is the steering angle from straight ahead to hard over

The value of cosD for the most common steering angles is tabulated in table 1.

Model	Steering Angle							
	25°		30°		35°		40°	
EA30xx	A	B	A	B	A	B	A	B
	9.46"	7.45"	8.00"	5.80"	6.97"	4.58"	6.22"	3.64"
	240 mm	189 mm	203 mm	147 mm	177 mm	116 mm	158 mm	92 mm
	12860 in-lb		10390 in-lb		8565 in-lb		7150 in-lb	
	1453 Nm		1051 Nm		968 Nm		808 Nm	
	cos25 = .91		cos30 = .87		cos35 = .82		cos40 = .77	
EA33xx(C)	If space and geometry allows, mount the actuator as shown for EA30xx. In wakeboat applications, space constraints may prevent mounting the actuator as directed. Such cases cannot be adequately covered in this manual — please contact Dometic for assistance.							

Table 1.

➤ Once you've determined the foot location, test fit the actuator and check:

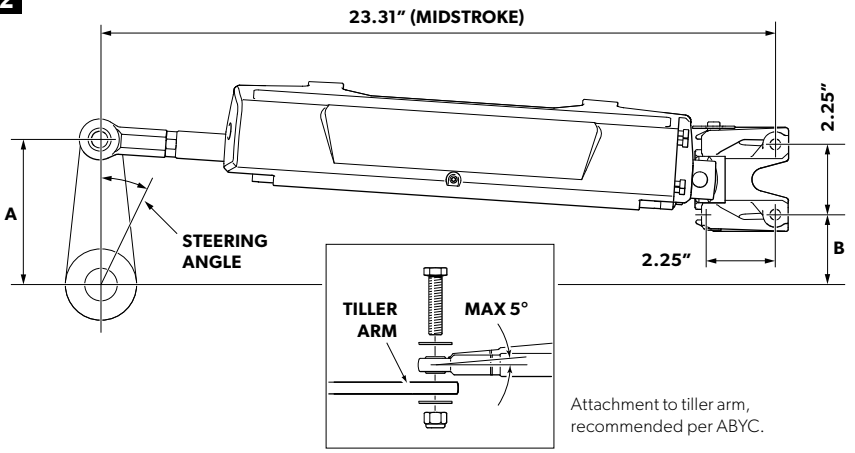
- o there is clearance around the actuator for articulation
- o there is at least 5.5" clearance at the harness connection to accommodate the minimum harness bend radius of 3.5" (89mm).
- o vertical alignment of shaft and tiller is within 5° as shown in the inset of figure **2**.

➤ Mount the actuator foot using four 5/16" (8 mm) stainless steel fasteners. Use shims below the foot if necessary to correct vertical alignment. Through-bolting with self-locking nuts is recommended. Torque to the fastener manufacturer's recommendation for material and class of fastener.

➤ Pin the actuator to the foot. If the pin is vertical, install it with the flange up such that the pin would not fall out if the locking cotter pin was not correctly installed.

➤ Install the locking cotter through the hole in the pin. Ensure that the cotter snaps into the locked position as shown in figure **3**.

2



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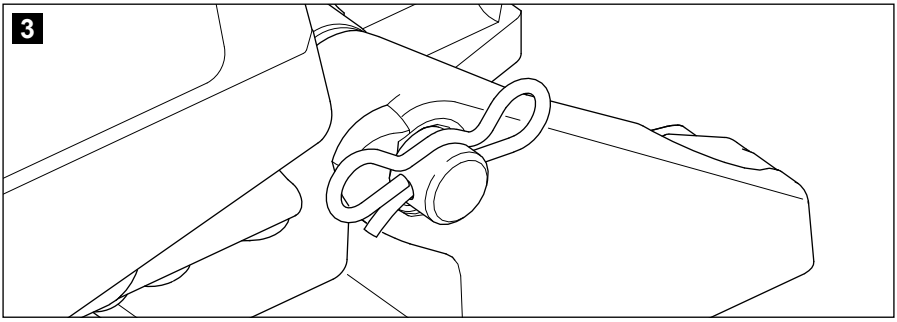


WARNING!
Failure to correctly install the cotter pins may lead to loss of steering control resulting in a collision and/or ejection from the boat, leading to property damage, personal injury, and/or death.

➤ Remove the shipping caps and plug the harness connector into the actuator.

➤ Tighten all four screws supplied with the harness until they are snug, then torque to 18–22 in-lb (2.0–2.5 Nm).

➤ Fasten the actuator rod end to the tiller arm using the stainless steel bolt and nut provided. Torque to 37–43 ft-lb if dry, 28–32 ft-lb if the threads are lubricated with grease or anti-seize compound.

3.2 Route the harness

NOTICE!
Leave the protective cover on the harness connector until you are ready to connect it to the actuator, otherwise the connector may be damaged.

The harness is supplied with a bulkhead plate and cord grip pre-installed. You may not need this bulkhead fitting, in which case we recommend that you use a tie wrap on one of the mounting holes to secure the plate to a fixed point on the boat. This can help manage the harness routing, and it will keep the plate from moving around and potentially damaging the harness or other equipment on the boat.

If you need to run the harness through a bulkhead:

- ➤ Determine where you want the harness to enter the bulkhead, ensuring that the harness bend radius will not be less than 3.5" (90 mm).
- ➤ Drill a 1.5" (38 mm) hole in the bulkhead where you want the harness to enter.
- ➤ Loosen the cord grip nut so that it can slide over the harness. Feed the harness through the hole until the bulkhead plate contacts it. Mark the screw hole locations.
- ➤ Pull the harness out and drill 3/16" pilot holes.
- ➤ Feed the harness back through the hole and fasten the bulkhead plate using three screws (not supplied).
- ➤ Adjust the amount of harness pulled through the bulkhead so that there is enough slack to accommodate the movement of the actuator during operation.
- ➤ Tighten the cord grip by hand, just tight enough to compress the grommet slightly and secure the harness. Excessive torque may damage the harness.

3.2.1 Harness protection

The actuator harness consists of three cables terminated at a single molded connector at the actuator end. For a tidy and reliable installation, the three cables must be properly bundled together and secured.

- ➤ Secure the harness with tie wraps every 12" (300 mm) or run the harness through a rigging tube.

4 Electronic helm installation

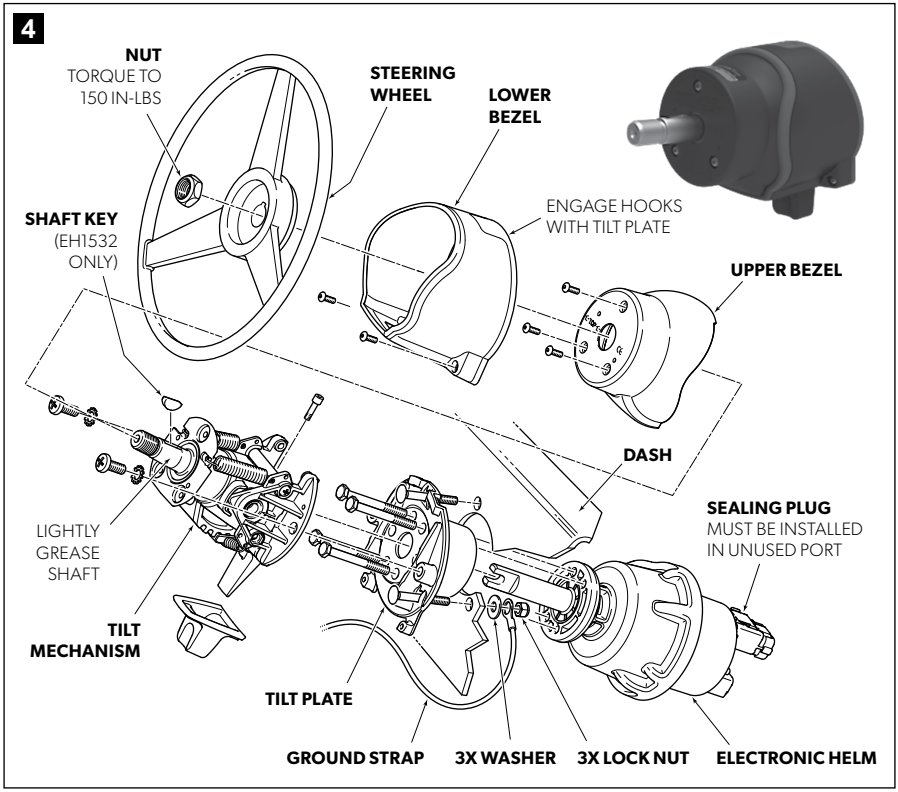
Find the installation diagram for your helm in the following pages.

Before beginning the installation, carefully unpack the helm from the box and check that you have all the required hardware shown in the diagram.

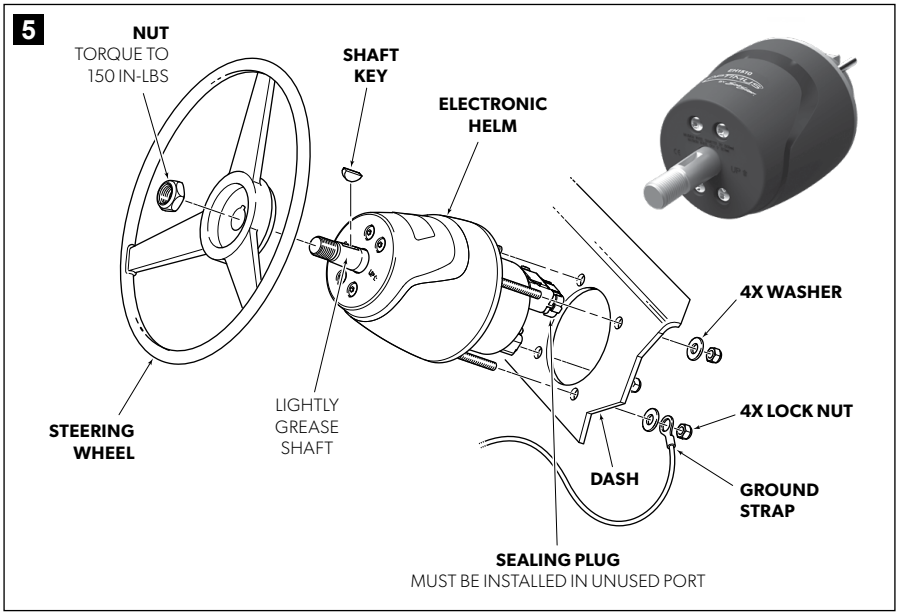
NOTE
A mounting template for each helm type can be found in section 7. Make sure you are using the correct template before drilling or cutting the dash.

WARNING!
The helm must be grounded to the negative bus or battery negative with the supplied ground strap, as shown in each installation diagram. The steering sensor may be damaged by static electricity discharge if the ground strap is not installed.

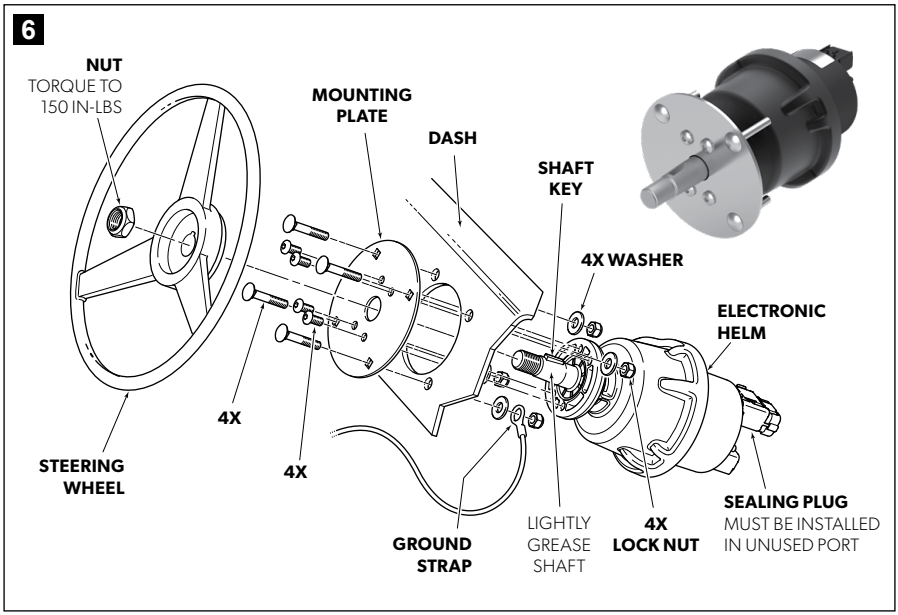
Sport Plus Tilt helm EH1532/EH1535



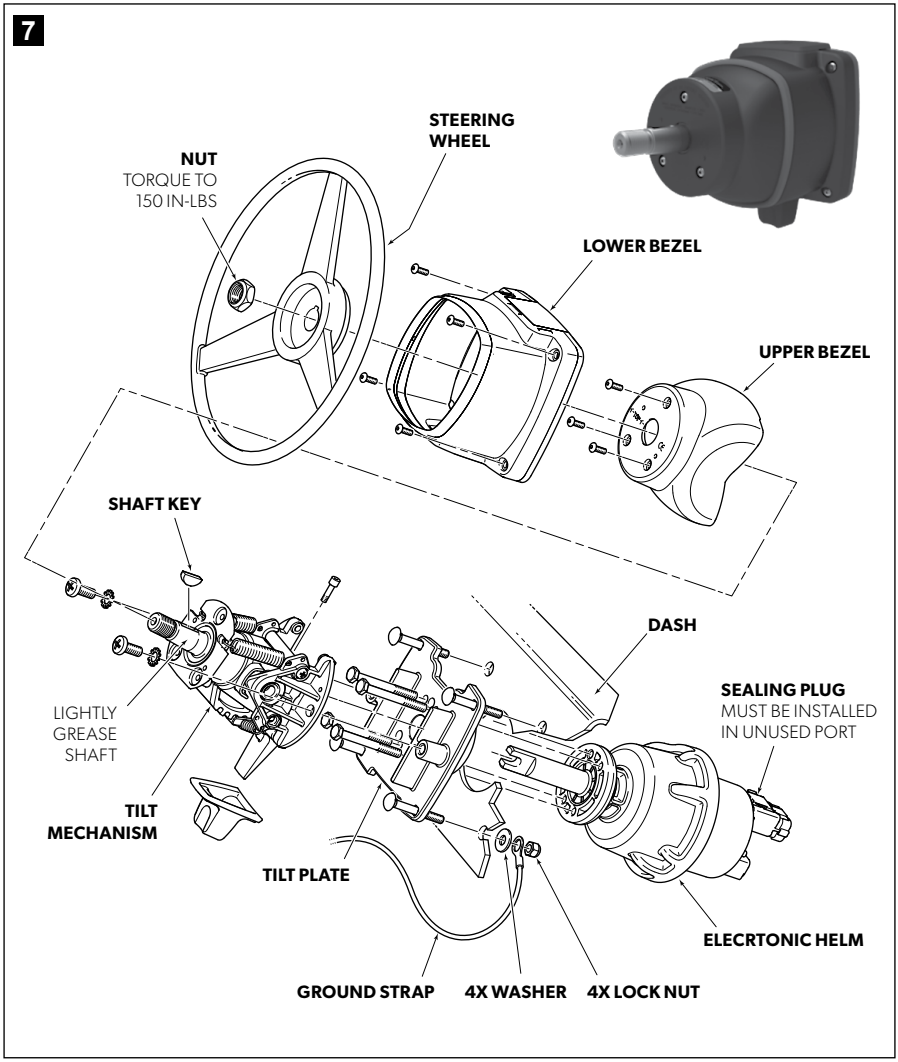
Front mount helm EH1512



Rear mount helm EH1572



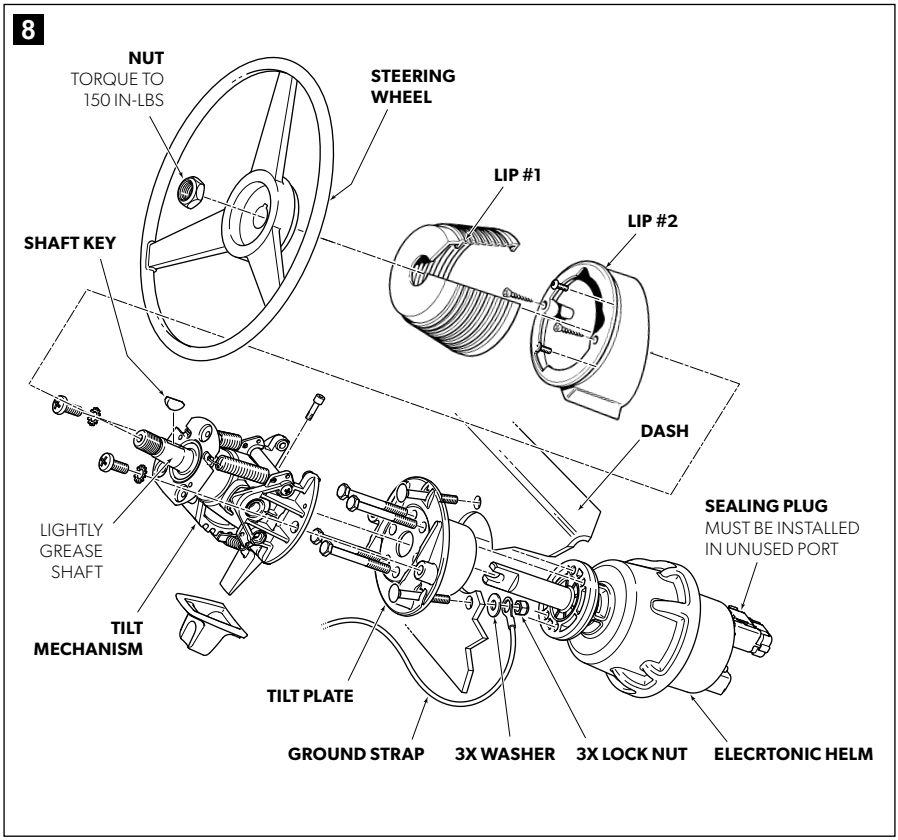
Classic tilt helm EH1552



WARNING!

Use only the self-locking nuts provided. Substitution with non-locking nuts may result in loosening or separation of equipment. This may result in loss of steering, which could lead to a collision and/or ejection from the boat, causing property damage, personal injury, and/or death.

Sport Tilt helm EH1565

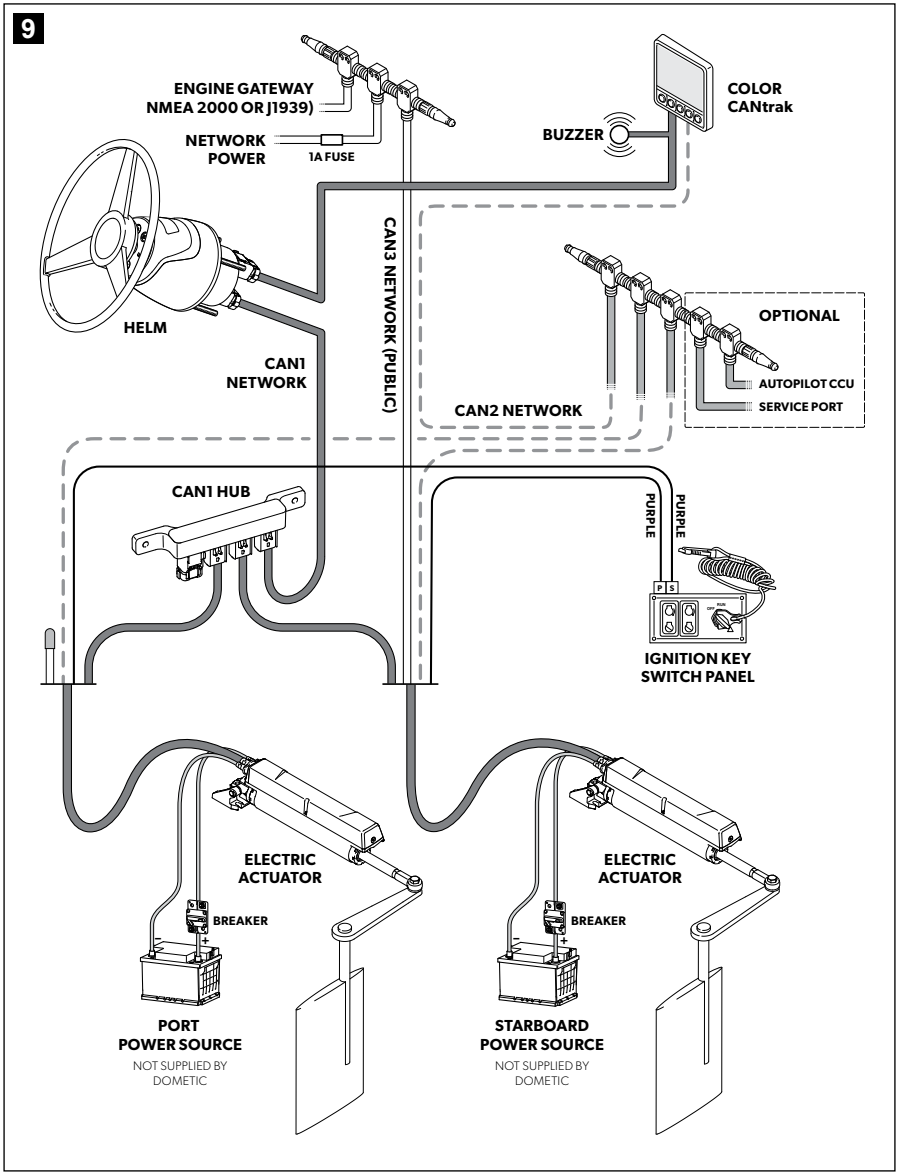


Ground strap

In all helm applications: install one end of the ground strap between the nut and washer on the helm's mounting stud as shown. Connect the other end to a ground point on the boat. This could be a negative bus bar, the negative terminal of the battery, or a designated grounding terminal.

5 Electrical connections

All system connections are made from the Electric Actuator harness. A sample schematic is shown in figure **9**. It will help you understand the system connections described in the following sections.



5.1 Power connection

NOTE

- All system wiring and power connections must be made to ABYC standards.
- The negative terminals of all batteries must be connected together.
- Refer to *ABYC E-11 – AC and DC Electrical Systems on Boats*

5.1.1 Planning your 12V power connections

Figure **10** shows a sample power schematic. For each actuator in your system, you will need the following items (not included with your installation kit):

- A 12V DC power source capable of supplying 40A peak current during aggressive use.
- A 60A circuit breaker, designed for marine use.

NOTE: Typical source connections

- Direct to the batteries.
- To battery switches. (Never switch the negative wire.)
- To a bus bar or power distribution panel. Ensure the wire size from the bus to the batteries is sufficient to handle the peak current of all devices connected to the bus.

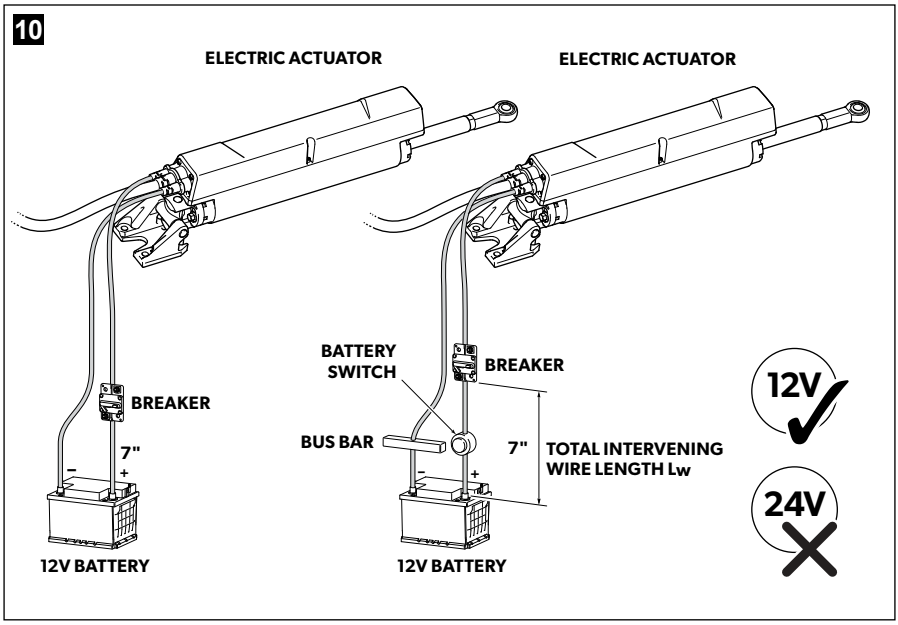
- Red wire that meets ABYC requirements, of the appropriate size for the intervening wire length between the actuator harness and the battery (see figure **10** and table 2).
- Crimp lugs sized for connecting the circuit breaker to the power source.
- Secondary circuit protection devices if required (see note).

NOTE: Circuit protection

- ABYC standards require a circuit protection device within 7" (180 mm) of the power source on all wires carrying positive voltage.
- If the circuit breaker is more than 7" (180 mm) from the source, a secondary device (circuit breaker or fuse) must be located within 7" of the battery to protect the intervening wire.
- Secondary device must be rated based on intervening wire size, and usually has a higher rating than the circuit breaker.
- Refer to *ABYC E-11 – AC and DC Electrical Systems on Boats* for more details.

Lw, m (ft)	AWG (mm^2)
< 1.0 (3.3)	6.0 (13.5)
< 3.0 (9.8)	4.0 (21.0)
< 4.5 (14.7)	2.0 (34.0)

Table 2.



5.1.2 Making your 12V power connections

- Install the 60A circuit breakers within 7" (180mm) of the power source for each actuator. Use corrosion resistant, stainless steel hardware.
- Connect the positive power source to the corresponding circuit breaker. Size the wire for at least 60A. Tighten the terminal to the torque specified by the circuit breaker manufacturer.

CAUTION!
Lugs must be crimped and soldered on all power connections.

- Connect the –ve (black) lead from each actuator directly to the battery negative terminal or a negative bus bar. Do not use the vessel bonding system for the negative connection.

➤ Connect the +ve (red) lead from each actuator to the corresponding circuit breaker. Tighten the terminal to the torque specified by the circuit breaker manufacturer.

NOTICE!
The power supply wires in the harness are correctly sized for the load and harness length. Do not extend the harness. Excessive voltage drop will result in reduced performance and may damage electrical equipment.

5.2 CAN1 connection

CAN1 is a fault-tolerant network used to connect the actuator to the helms and CANtrak displays. The network is safety-critical, so be sure you understand and follow all the requirements in this section.

CAUTION!
CAN1 is a private network that is not NMEA 2000 compatible.
- Do not attempt to connect any other devices to this network.
- Do not cut, splice, or otherwise modify any harnesses.

5.2.1 Planning

On small boats the CAN1 harness may be long enough to reach the helm, but in many applications it will not, so it will need to be extended. Table 3 shows the harnesses that are available, up to 36ft (11m) long, with an available 46ft (11m) extension harness.

CAN1 HARNESS — HELM TO SCU One harness is required for single helm station, two are required for multiple helm stations.		
DESCRIPTION	**LENGTH, FT (m)**	**PART No.**
Harness, EPS, H4, 6 PIN FCI , F-F	6 (1.8)	CM20406
	12 (3.6)	CM20412
	18 (5.5)	CM20418
	24 (7.3)	CM20424
	30 (9.1)	CM20430
	36 (11.0)	CM20436
Harness, EPS, FTCAN Extension, M-F	36 (11.0)	CM22036
Harness, Wye, M-M-F	2 (0.6)	CM21702
Harness, gender changer, M-M	1 (0.3)	CM22401
CAN1 Hub, 4xM	N/A	HA5497

Table 3.

Considerations

- The CAN1 connector on the actuator harness is female. In order to use the CM204XX harnesses you must connect a 1ft gender changing harness (CM22401) to the actuator harness first. Alternatively, you may use an extension harness (CM22036) to connect the actuator harness directly to a helm, but it is only available in one length.

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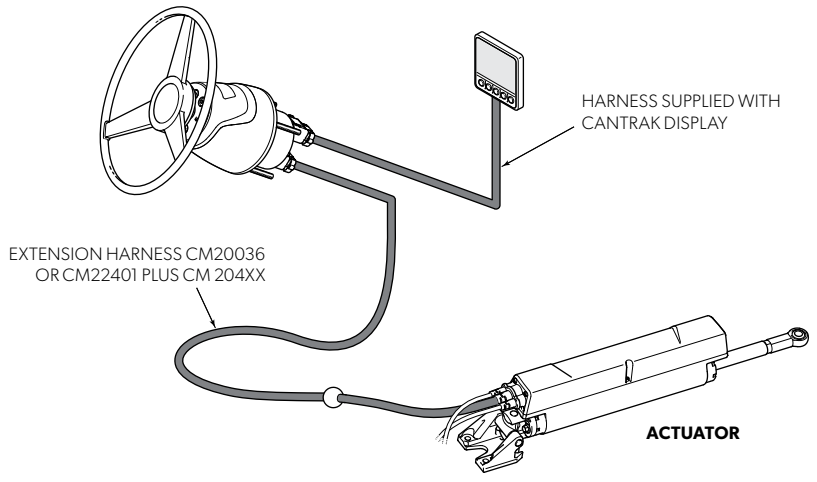
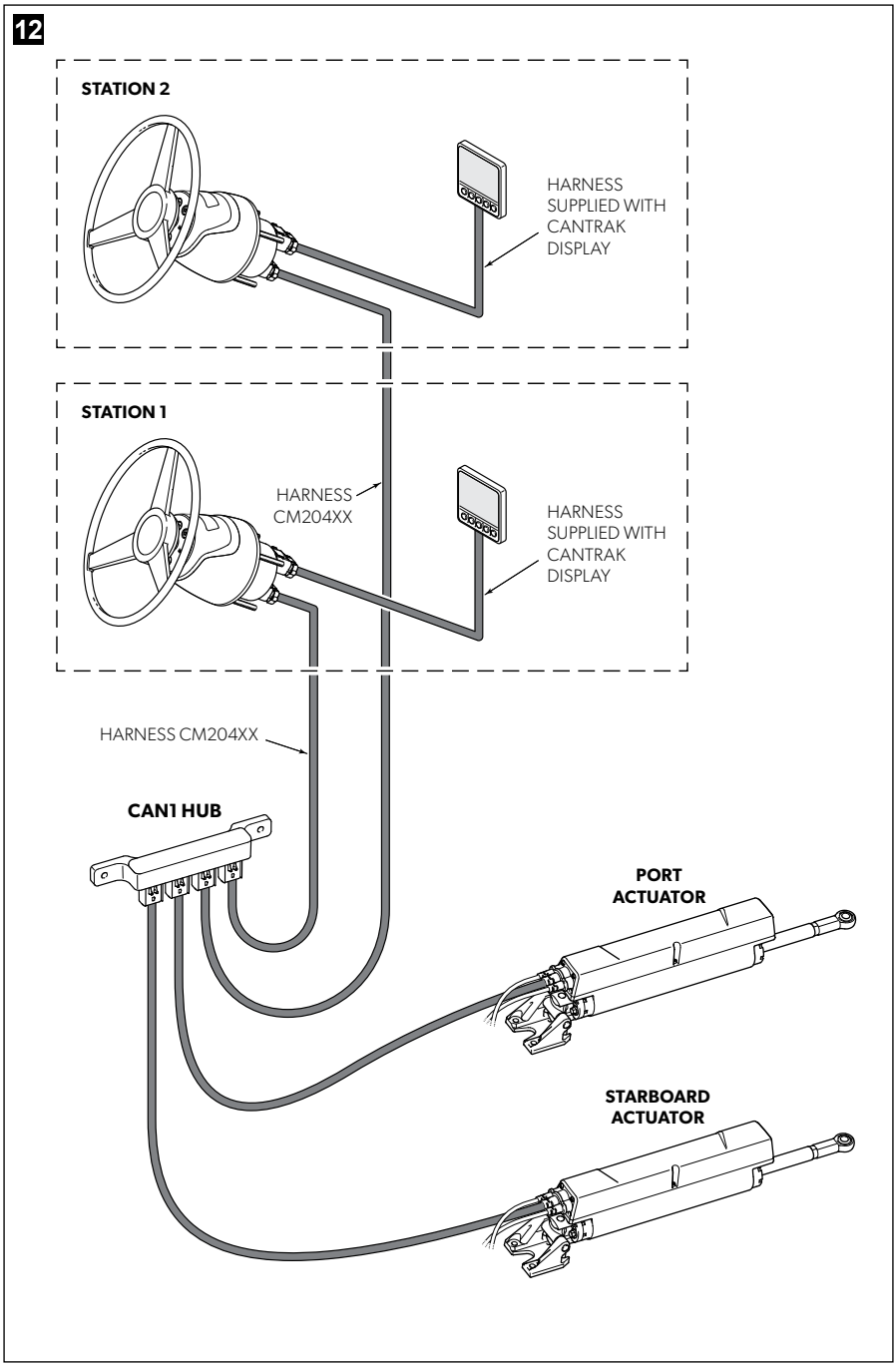


- Do not use more than two extensions (for a total of three harnesses) between consecutive devices.
- The harness length to the farthest device may not exceed 120ft (36m) in total.

The pages that follow present some sample connection diagrams to help you determine the harnesses that you need. It's not possible to show every possible configuration, so please contact Dometic technical support if you need assistance.


12
STATION 2
HARNESS SUPPLIED WITH CANTRAK DISPLAY
STATION 1
HARNESS CM204XX
HARNESS SUPPLIED WITH CANTRAK DISPLAY
HARNESS CM204XX
CAN1 HUB
PORT ACTUATOR
STARBOARD ACTUATOR

5.2.2 Installation

Harness routing

It is important to route all CAN1 harnesses in a way that protects them from standing water, physical damage, from being stepped on, or from being pulled. Best practice is to run the harness through PVC conduit. Use tie wraps or other means to secure harnesses at all connection points, at entry and exit from rigging conduit, and at regular intervals along its length if you do not have rigging conduit.

CAUTION!

Failure to secure the harness may result in harness damage, leading to loss of communication. This may result in loss of steering, which could lead to a collision and/or ejection from the boat, causing property damage, personal injury, and/or death.

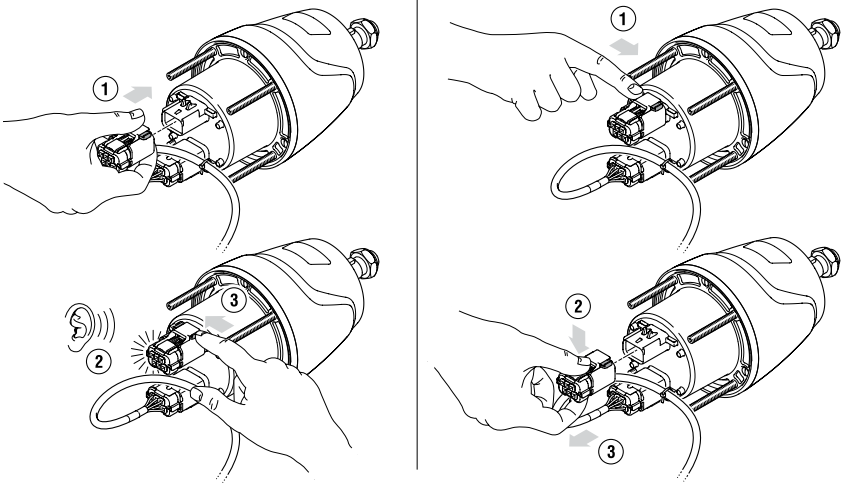
Connectors

Installation of the connectors into the receptacles is straightforward. Push the female connector into the mating male socket, listen for the click indicating a positive lock, then engage the secondary lock as shown in figure **13**.

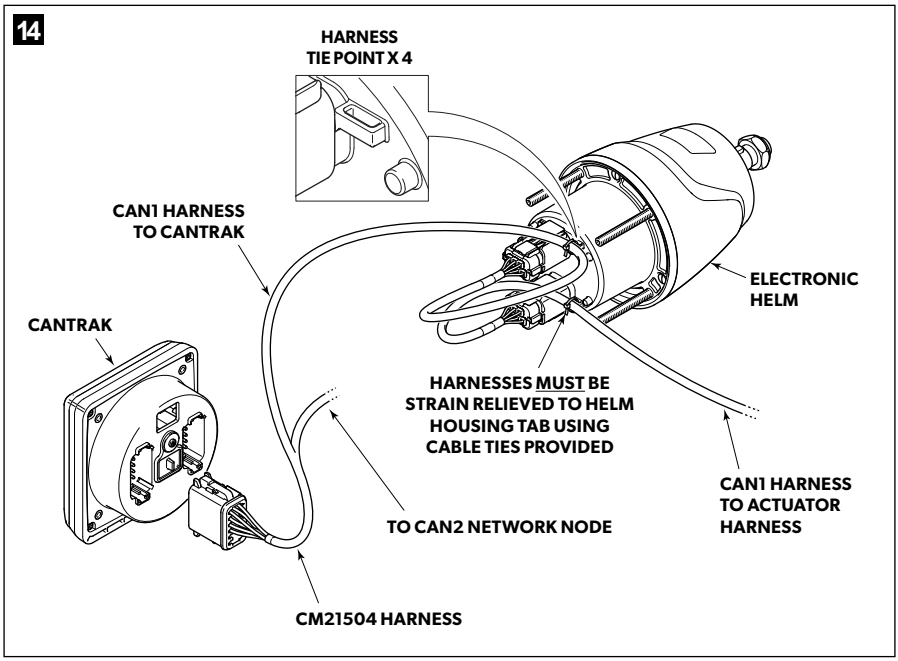
CAUTION!

A sealing plug must be installed in any unused ports.

13



You must secure the harnesses at the helm using the harness tie points, as shown in figure **14**.



5.3 CAN2 connection

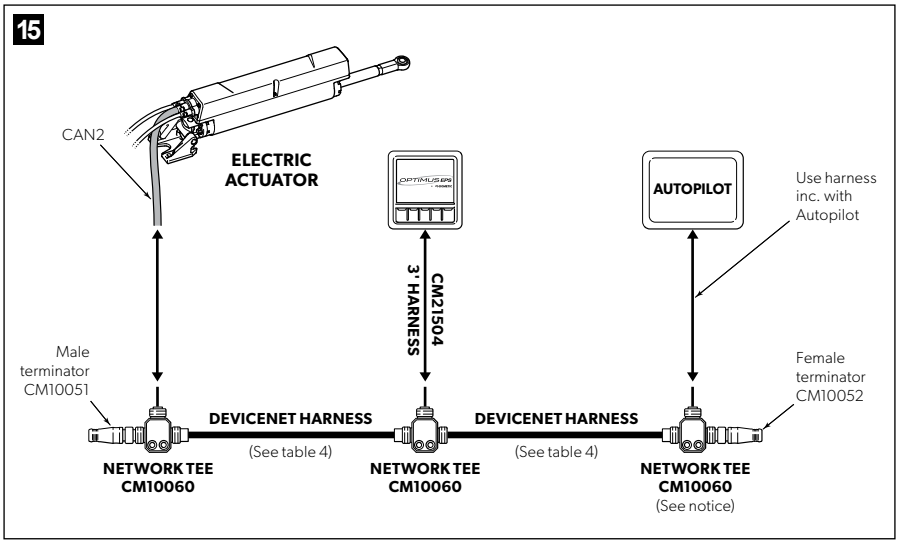
The CAN2 network is used to connect the CANtrak display and a third-party autopilot that is certified by Dometic to work with the EPS system.

NOTE

The details of each autopilot's network connection will be specific to the manufacturer, so be sure you read and understand the instructions that come with the autopilot system.

5.3.1 Planning

You will need to build a small CANbus network with a node (tee connector) for each actuator, each display, and for the autopilot. Locate the nodes close to the devices and use an extension harness to create a network backbone. Your network will look similar to figure **15** (only one actuator is shown, but you will need to connect both in a twin-actuator system). The CAN2 bus is powered by the SCU, so a separate power supply connection is not required.



NOTICE!

If you are using a Simrad SG05 autopilot you must use a power isolating tee such as a Navico 000-12259-001 or a Garmin 010-11580-00. Do not use a CM10060 for this connection or electrical damage may occur.

Optimus EPS uses DeviceNet cables with sealed M12 connectors that are NMEA 2000 compliant and compatible with the tees supplied with the autopilot systems. Table 4 shows the available extension harnesses you can use to build your backbone. You can chain up to three harnesses together to a maximum length of 90 feet (27.3m).

NOTE

- Every connection is a potential failure point. Minimize the number of connections in your system and always locate them in dry and protected areas.
- Never put connections in inaccessible places like rigging tubes or conduit.
- Do not cut or splice DeviceNet harnesses.
- Do not connect anything other than Optimus components or approved autopilots to the CAN2 network.

Micro-c DeviceNet harness		
Description	**LENGTH, FT (m)**	**PART No.**
Harness, EPS, H4, 6 PIN FCI , F-F	1 (0.3)	CM10001
	3 (0.9)	CM10003
	6 (1.8)	CM10006
	9 (2.7)	CM10009
	12 (3.6)	CM10012
	16 (4.9)	CM10016
	20 (6.1)	CM10020
	30 (9.1)	CM10030

Table 4.

5.3.2 Installation

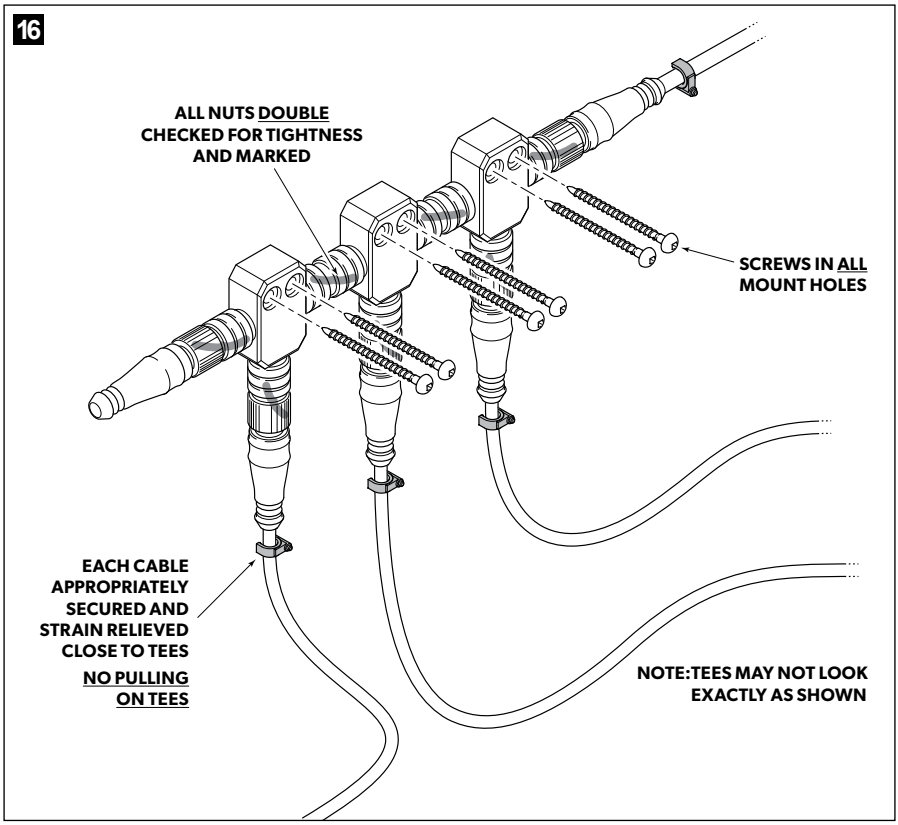
➤ Install the network tees as shown in figure **16**.

➤ Plug the harnesses in to the tees. The connectors are keyed so that they only install in one way. Hand tighten the connections. Do not use tools. Use tie wraps or other means to secure the harnesses to prevent strain on the connection.

NOTE
The actuator harness has two DeviceNet connectors, labeled CAN2 and CAN3. Be sure you are connecting the one marked CAN2.

➤ Ensure that you have two – and only two – terminating resistors, one at each end of the network backbone, as shown in figure **15**.

➤ When installation is complete, use a permanent marker to draw a line across all DeviceNet connections. If one of the connections become loose it will be evident.



5.4 CAN3 connection (Engine RPM)

The CAN3 connector on the SCU harness is used to get the engine RPM signal from an NMEA 2000 network. The Optimus system will also broadcast data, such as rudder position. You have two options to make this connection:

Use existing bus: if the boat already has a NMEA 2000 bus with an RPM signal on it, you can simply connect the CAN3 harness to an available DeviceNet tee on the bus. If no tee is available, you will need to add one (CM10060). You may also require an extension harness from table 4 to extend the backbone and bring the tee within reach of the harness.

Create a new bus: if the boat does not have an NMEA 2000 bus, you can create one using kit HA5496. In addition to the kit you will need a gateway device that bridges the engine network to the NMEA 2000 bus, supplied by the engine manufacturer.

The kit comes with installation instructions.

5.5 Ignition sensing

The Electric Actuator harness has a single purple ignition-sensing wire that must be connected to an ignition source (has system voltage when ignition is on). This wire provides the wake-up signal to the Electric Actuator; the steering system will not work without it.

NOTE: Multi-engine applications
The electric steering actuators also receive a wake-up signal over the CAN1 network, so both actuators will be on as long as one of the ignition-sensing wires has a signal. You must still connect both sensing wires.

Important wiring requirements

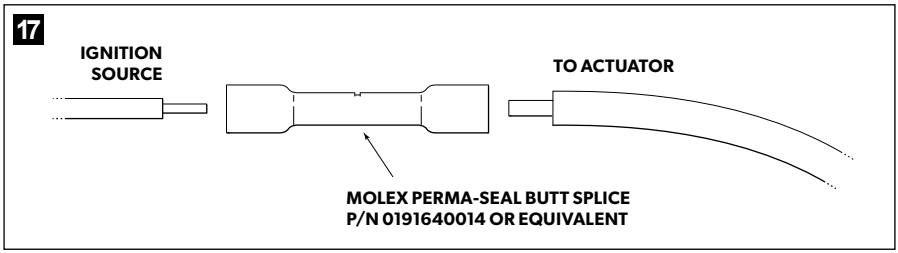
- The ignition-sensing wire must be routed in such a way that it is protected from physical damage, water, and high temperatures over its entire length. Incidental splashing water is okay but avoid immersion or prolonged spray. Never put splices in a wet area.
- Use tie-wraps or other strain-relief devices on either side of any splice and at the final connection point. If someone inadvertently pulls on the wire anywhere in its travel it must not pull any splice or connection apart.
- Use sealed, heat-shrink butt splices, such as Molex Perma-Seal, or a soldered connection with heat-shrink tubing. Follow the manufacturer's instructions to ensure a proper splice.

DANGER!
The integrity of the ignition-sensing circuit is critical to the safe operation of the steering system. Follow these instructions carefully. Failure of the ignition-sensing circuit will result in loss of steering control, which could lead to a collision and/or ejection from the boat, causing property damage, personal injury, and/or death.

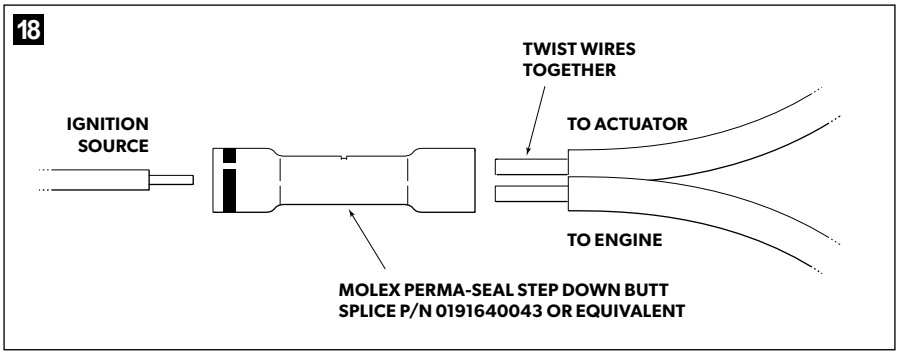
Ignition source options

On most boats you will have one of two options for an ignition source: you can connect to a single ignition source wire, or you will have to splice into an existing ignition wire.

OPTION 1 – Single ignition source



OPTION 2 – Splice into an existing engine ignition wire



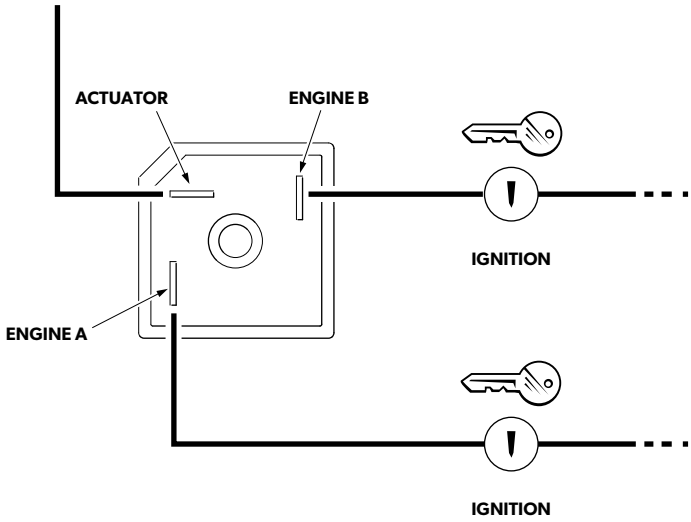
Application specific instructions

How you wire the ignition will depend on the number of engines and actuators. See table 5.

No. of engines	No. of actuators	
	1	2
1	Connect the ignition-sensing wire to the engine ignition.	Connect both ignition-sensing wires to the engine ignition.
2	The ignition-sensing wires must be connected in such a way that an ignition-on signal is received when either of the engine ignition switches are on. Some boats may be wired to deliver such an ignition signal, but you may require a Dual Ignition Kit (HA1201) to combine the ignition from a pair of engines into a single source. See figure 19.	Connect the ignition-sensing wire of each actuator to the corresponding engine ignition.

Table 5.

19



6 Setup and configuration

Before the Optimus EPS system can be used it must be configured. At a minimum, you need to do the Initial Setup and the Steering Setup. In the Initial Setup you will specify the type of system you are configuring, as well as the number and location of the devices that are installed. In the Steering Setup you will calibrate the steering actuators.

NOTE
This manual assumes that you are familiar with navigating the CANtrak display menus. If this is not the case, refer to section 2 of Book 65 – System Setup and Configuration Guide – for more information.

6.1 First-time power-up

The first few times you turn on your system you will get several warnings and alarms because the system has not yet been fully configured and calibrated. Silence the buzzer by pressing **Mute** on the display.

Press and hold the Menu button for five seconds to show the Dealer Menu PIN entry screen. (Active alarms may hide the Menu button – it is always the right-most button under the display.) Enter your PIN to access the Dealer Menu.

NOTE
After entering your dealer PIN, the display may revert to an error screen if errors are present. Press the right-most button to scroll through the errors until the dealer menu is displayed.

6.2 Initial setup

Initial Setup is performed from the System Setup screen. Navigate to **Dealer Menu > Initial Setup > System** and you will see the setup steps presented in order on the display. It is important to perform these steps in the order shown. Once you've completed the steps you will be prompted to cycle system power.

6.2.1 Select system type

Select **Optimus EPS**.

6.2.2 Select steering type

Select your actuator model, **Inboard EA30XX** or **Inboard EA33XXC**, from the list.

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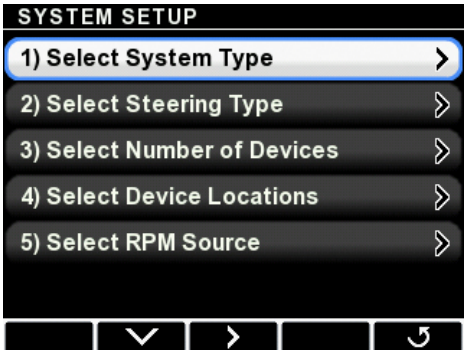

6.2.3 Select number of devices

The CANtrak will display a list of devices based on the system type. Use the **+** and **–** buttons to change the quantity of each device to match the system.

These parameters tell the system how many of each device to look for on the CAN network. If the numbers do not match you will get repeated error messages from the display.

6.2.4 Select device locations

Each device on the network must be "instanced" correctly when there are more than one of each type present. Instancing means teaching the system which actuator is port, which is starboard, and which helm is main station, and which is 2nd station.

The CANtrak will list all the devices on the CAN network along with their serial numbers. Match the devices by the serial numbers and use the **+** and **–** buttons to toggle between Port or Stbd, and Main or 2nd (or 3rd in supported systems) station.

6.2.5 Select RPM source

The only valid RPM source is the default, NMEA2000, so you do not need to change anything.

6.3 Steering setup

The setup steps in this section are required for all Optimus EPS systems. All the steering setup tasks are done from the Steering Setup menu at **Dealer Menu > Initial Setup > Steering**.

6.3.1 Configuration

The configuration step teaches the SCU about your steering geometry.

- ➤ Determine from your tiller geometry which direction the boat steers when the shaft extends, and how much rudder angle you get at hard over.
- ➤ Go to **Configuration > Set Cylinder Extend Turn Dir** and press the **+** or **–** button to set the parameter to the correct direction. **Save** to exit.
- ➤ Use **+** or **–** to adjust the Hard Stop Rudder Angle parameter to match your actual steering angle at hard stop. This parameter controls how the steering angle is scaled in the SCU. It affects the steering angle displayed on the CANtrak, as well as all steering settings that are based on steering angle.

6.3.2 Calibrating the Electric Actuators

The calibration procedure teaches the SCU the end-of-travel points for the actuator(s). The SCU expects to see these end points within a range of values based on the actuator stroke. If the actuator is unable to move through its full stroke the calibration will fail.

NOTE
In some wakeboat applications the tiller geometry may prevent the full stroke of the actuator. If this is the case you will need to detach it from the tiller in order to calibrate it. You must prevent the shaft from rotating during calibration.

- ➤ From the steering setup screen, select Calibrate Steering and press **>** to enter the calibration menu, then press **>** again to enter calibration mode.
- ➤ The display will prompt you through the calibration procedure. Follow the instructions on screen. Keep turning in the indicated direction until the screen prompts you to stop or change direction. If your system is configured with two actuators they will both calibrate at the same time.
- ➤ If the calibration is successful, the screen will display a green check and display "Calibration successful" in the status field. Exit the screen or power cycle the system to continue.

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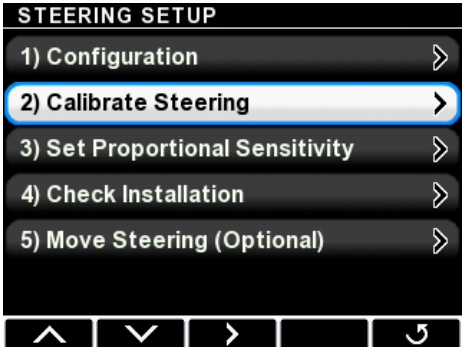


If the calibration fails, the screen will display a warning symbol and display "Calibration failed" in the status field. Double check the installation and ensure that there is no interference that is preventing the steering actuator(s) from moving through their full stroke. Exit the screen and try again.

NOTE
If calibration fails repeatedly, and you have confirmed there is no interference, contact Technical Support for assistance.

6.3.3 Align Rudders

It's possible that the rudder(s) may not be aligned straight ahead when the steering actuator(s) is at its calculated zero position. This group of parameters allows you to correct that.

➤ Change the value of the Enable Rudder Alignment parameter to **Yes**.

✓ Additional menu options will be displayed.

➤ In a twin-actuator system there is a Parallel Rudder Correction parameter. Select it, then press **Toe-in** or **Toe-out** until the rudders are parallel. For best results use a tape measure to check that they are parallel. Only the starboard rudder will move.

➤ Go to **Straight Line Correction**.

✓ The screen will display the amount of rudder correction that will be applied.

➤ Steer until the rudder(s) are aligned straight ahead.

➤ Press **Set**. The Straight Line Correction value will update and the Rudder value will go to 0.0.

NOTE

- Sometimes the boat will not track straight through the water when the rudder is aligned straight ahead. You can correct this by performing the straight line correction again during a sea trial. Steer the helm until the boat is tracking straight at cruising speed, then press **Set**.
- There is an option to **Clear Rudder Corrections** should you need to reset the steering center to the calibrated center.

6.3.4 Set Proportional Sensitivity

Proportional rudder sensitivity is an optional parameter used to increase the helm sensitivity at the neutral rudder position for more responsive steering. The total number of helm turns lock-to-lock is unchanged, so the steering becomes less sensitive as you approach hard over.

Proportional Sensitivity is set in **Steering Setup > Set Proportional Sensitivity**. There are two parameters:

Proportional Sensitivity Gain: This parameter controls the increase in sensitivity. The range is from 0.5 to 4.0 and represents a multiplier of the standard helm sensitivity. The default value of 1.0 means there is no change, and a value of 4.0 means the helm sensitivity is four times the normal setting. The multiplier applies at zero steering angle, then decreases linearly as steering angle increases. We suggest that you start with a gain of no more than 2 and sea trial before increasing the gain.

Proportional Sensitivity Range: This is the steering angle range (from zero degrees) over which the Sensitivity Gain is applied. Adjust the parameter between 0° and the maximum steering angle of 30°.

6.3.5 Check installation

At this point you have almost completed the installation and setup of the Optimus EPS with Electric Actuator. The final step is to check the installation for interference. Follow the interference check procedure in section 2.2 (“after installation”) and correct any interference before handing the boat over to the customer.

NOTICE!

- Failure to perform these checks may result in damage to the Electric Actuator, which could affect operation of the steering system.
- Do not hand the boat over to the customer without performing these checks and correcting any interference.

6.3.6 Move Steering (optional)

The Move Steering function allows you to steer one actuator in a dual actuator system individually. It is not a required step for initial setup.

To use this function, select **Move Steering**, then select either **Move port steering** or **Move stbd steering**. Once in this mode, turning the helm will move the selected steering actuator.

If the actuators are calibrated, backing out of the Move Steering mode and turning the helm will cause the actuators to auto-align.

6.4 Sea trial

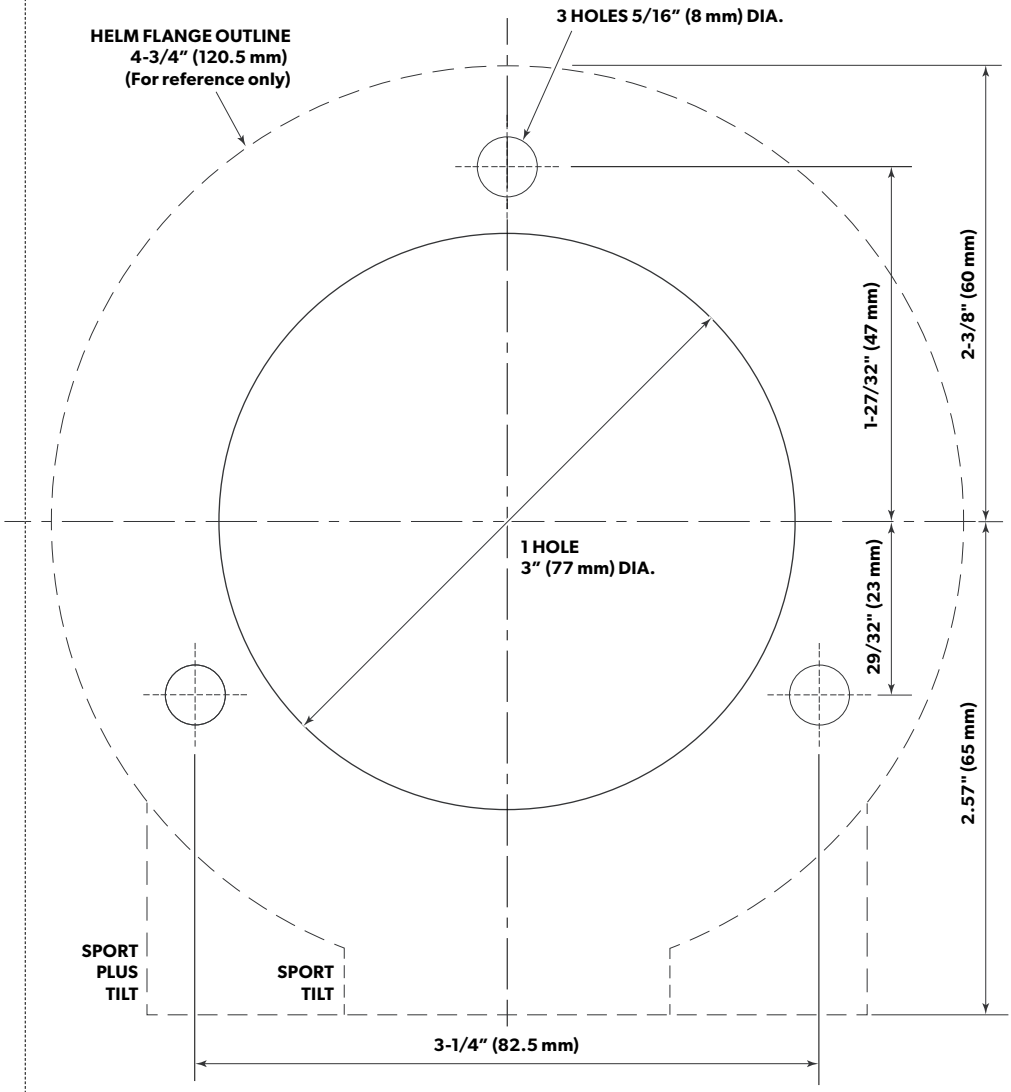
Refer to the sea trial instructions in Book 65 — System Setup and Configuration Guide. If you do not have this book, contact MarineTech@dometic.com for a copy.

In addition to the instructions in Book 65:

➤ Steer to an indicated 0° at cruising speed. If the boat is not tracking straight, perform the straight line correction in section 6.3.3.

7 Installation templates

7.1 Sport and Sport Plus tilt helms



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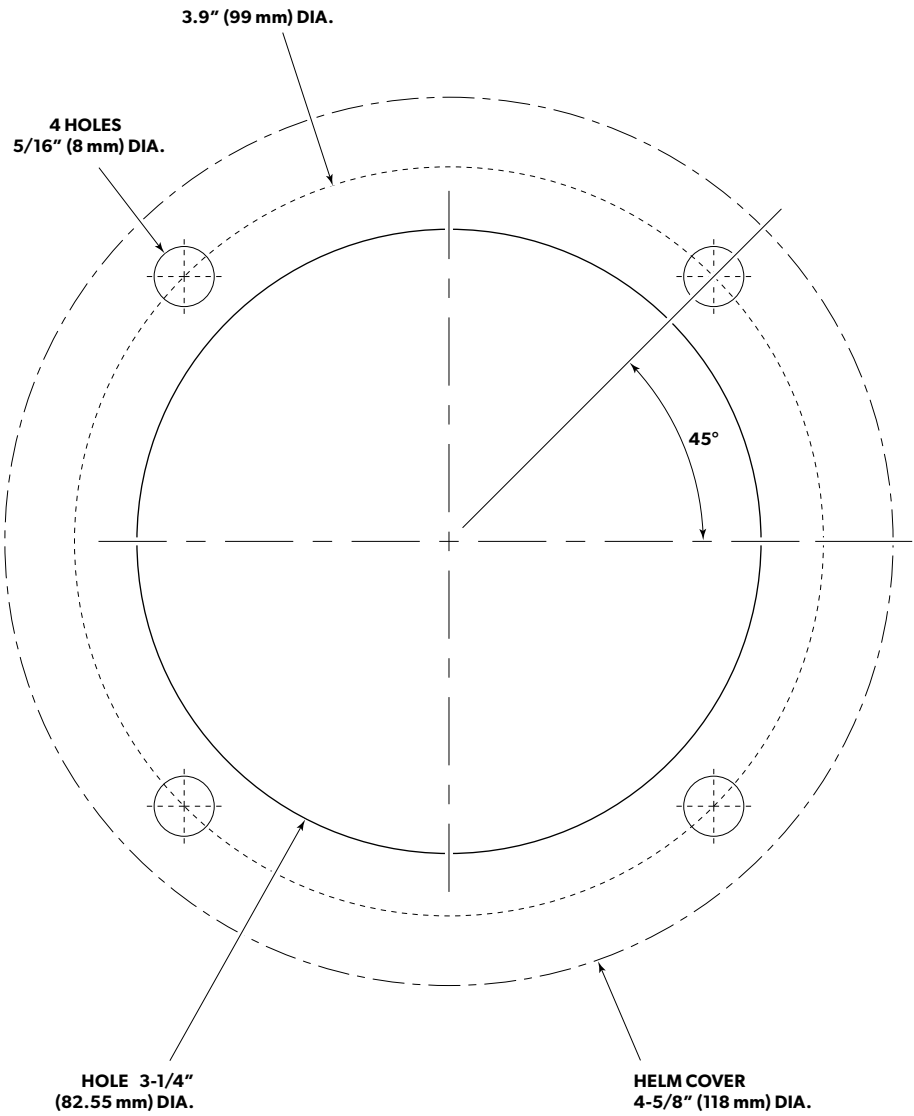
7.2 Front mount helm template



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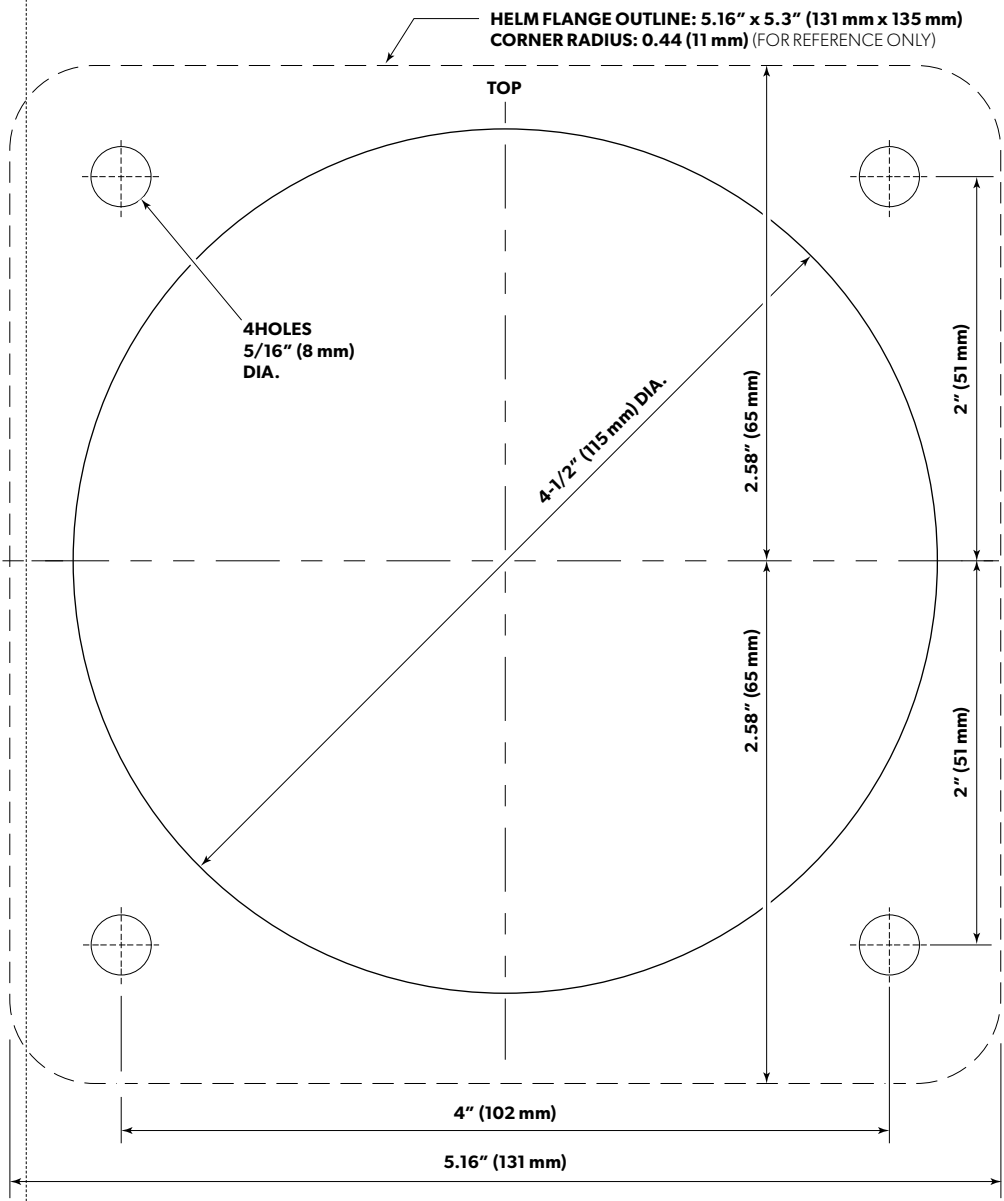
7.3 Classic tilt helm template



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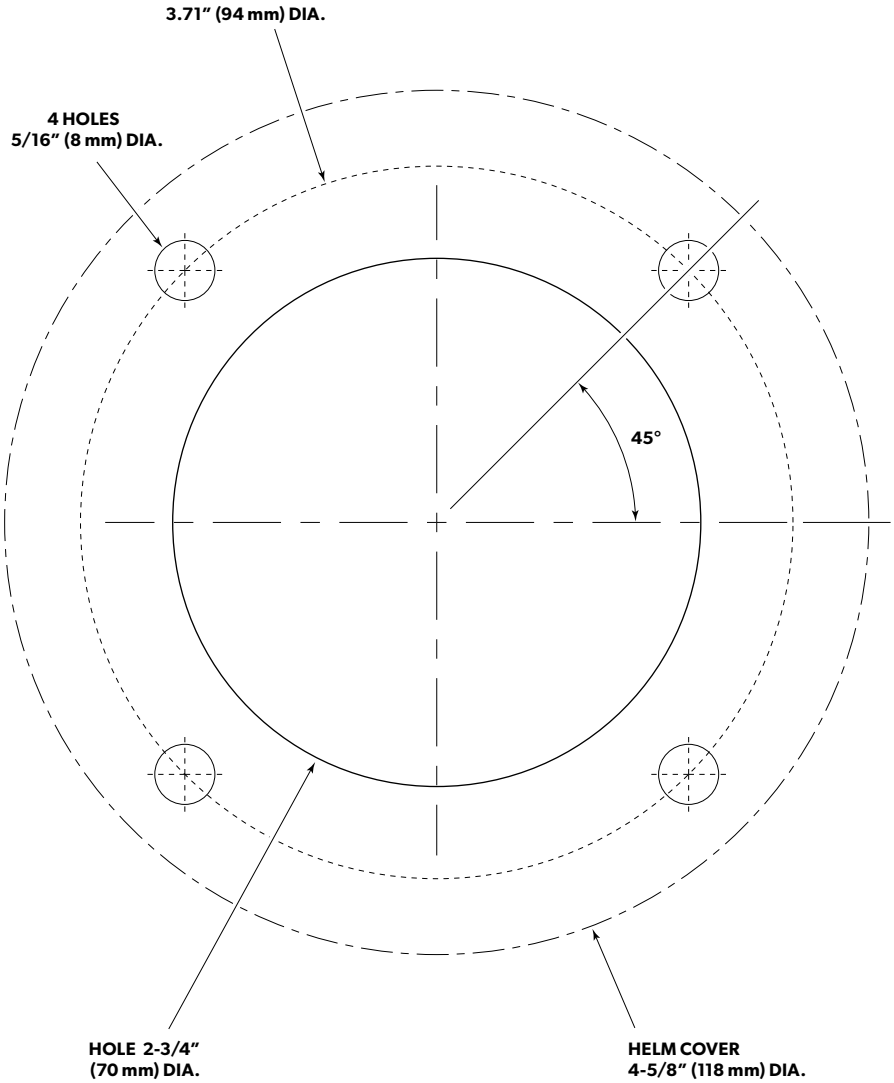
7.4 Rear mount helm template



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Notes

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